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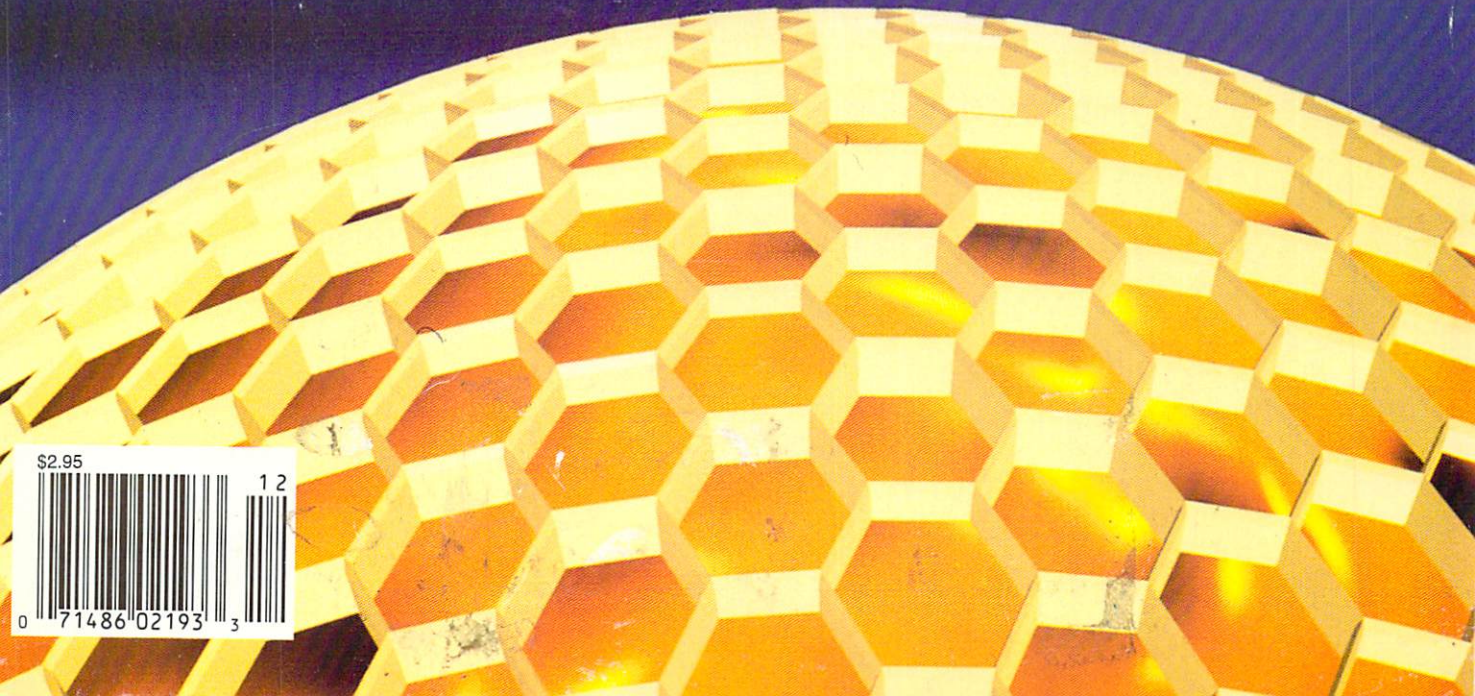

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# COMPUTE

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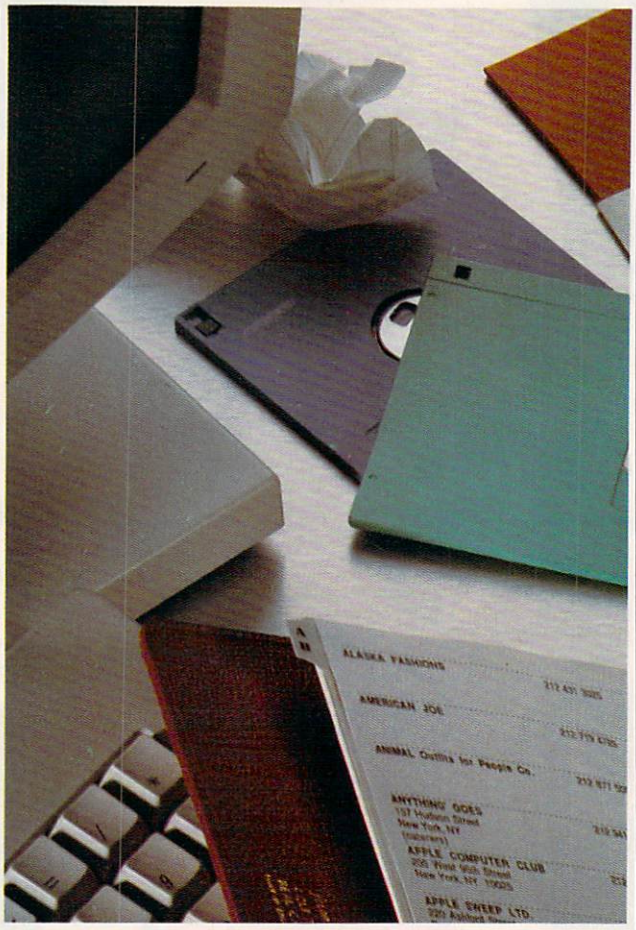


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# 64/128 VIEW

TOM NETSEL

'Twas the night before Christmas,
when all through the house
Every creature was stirring with
joystick or mouse.
The 1541 was humming, but its speed was a bore;
I knew by the wait it had to be a Commodore.

The kids were all snuggled by the monitor's bright glow
While multicolored sprites danced to and fro.
I'd just settled down for a long winter's nap,
Waiting for *Rambo* to load and some bad guys to zap,

When out on the lawn there arose such a clatter,
I glanced at my drive to see what was the matter.
I could tell by the glare of its steady red light
It was still sending data; at least it was all right.

I ran to the window, banged my head on the sash
(The kids continued to play and ignored the loud crash),
When what to my watering eyes did appear
But a miniature sleigh and eight tiny reindeer.

With a little old driver who handled his team
As lively and smoothly as machine language routine.
Though they looped through the heavens, he was never space sick,
Yet I get quite queasy just debugging BASIC.

His eyes—how they twinkled; his waist was not slim.
For a moment he reminded me of a Butterfield named Jim.
He shouldered his pack, though it was quite a chore,
Then trod 'cross my lawn and burst open the door.

I gasped in amazement (he no doubt thought me a jerk),
But he ignored us completely and went straight to his work.
He placed gifts 'neath our tree after clearing a place;
The kids—paying him no heed—blasted aliens from space.

He brought *Bard's Tale,* and *Krynn, Seven Cities of Gold*—
Great software titles, both new ones and old.
There was *SuperBase* and *EasyScript,* and what did I detect?
There was even a hard drive from the folks at Xetec!

He unpacked extra RAM, CPUs, and such things,
Plus a mysterious black box that made my floppy drive zing.
Then a wrapped gift he handed me; it wasn't a weighty one,
But I knew in a moment 'twas a new 1581!

Modems and monitors he pulled out of his sack
And even a plotter I made him take back.
But one gift he gave me I couldn't dispute:
A lifetime subscription to the revamped *COMPUTE.*

The jolly elf chuckled as he made for the door.
But he stopped, turned, and asked if there was anything more.
I booted up *SpeedScript* on my wife's 128
And dashed off a missive, praying I wasn't too late.

Though it's scratched, dinged, and dented, and sometimes quite slow,
My 64's a delight that others should know.
'Twould be such a pity to walk into a store,
Only to be told, "It's not made anymore."

So before Santa left on this magical night,
I pressed a note in his hand and squeezed it real tight.
"Take this message to Commodore in West Chester, PA.
It says, 'Keep the 64s coming, guys, at least through next May.'"

"Now, Dasher! Now, Dancer! Now, Prancer and Vixen!
On, Comet! On, Cupid! On, Donder and Blitzen!"
Up to the garage-top the coursers did loop
And turned a neat figure eight past our basketball hoop.

As they flew to the north past my satellite dish,
I was hoping that Commodore would grant my last wish.
But even if it didn't, I was still brimming with cheer
Because finally tonight I'd learned the names of those deer.

*Rambo* was still loading on my old 64
As I reentered the house and closed the front door.
A carol was playing on our stereo SID,
And the kids were apologizing for something they did.

I went to the window and gazed into the night,
But something caught my attention and gave me a fright.
Santa's last gift rested there on the sill.
I opened it up; 'twas a credit card bill.

*If Clement C. Moore had access to a 64 and a good word processor, no telling how* "A Visit from St. Nicholaus" *might have turned out. Happy holidays and my appologies to Mr. Moore.* ⊡

# NEWS & NOTES

## Not Dead Yet

Upon hearing a rumor that he was dead, Mark Twain once quipped, "The reports of my death are greatly exaggerated." Similar rumors abound about the demise of the 64, and they've been circulating throughout user groups across the country and in their newsletters. In order to seek out the truth, Gazette contacted Charles Russell, Commodore's national marketing manager for consumer electronics, and put the question to him. His answer was almost as succinct as Twain's: "The 64 is in production and still going as usual."

TOM NETSEL

## A Little Help from Our Friends

A further indication that there's still life in the 64 is a new service Commodore has announced for its 8-bit computer.

Commodore Express, a Commodore/Federal Express joint venture, offers a 24-hour toll-free "helpline" and door-to-door customer service for owners of the 64 and Commodore's MS-DOS–compatible Select Edition computers. This protection service was introduced earlier in the year for Amiga 500 owners.

Commodore Express is part of a new customer service package designed with the home computer user in mind. It offers free pick-up and return delivery for in-warranty repairs, plus free telephone assistance to help users set up and operate their computers. The Commodore Express contact number is (800) 448-9987.

According to Tom Kilcoyne, Commodore's director of consumer marketing, in the first two months of the program, 75 percent of the incoming calls were serviceable over the telephone, and the average turnaround time on Federal Express pick-up/delivery has been 48 hours.

TOM NETSEL

## Meanwhile, Back in the Dungeon

*Dragons of Flame* is the most recent release for the Commodore 64/128 from Strategic Simulations.

The second Advanced Dungeons & Dragons action game to take place in TSR's Dragonlance game world, *Dragons of Flame* ($19.95) challenges you to save the world of Krynn from Takhisis, the Queen of Darkness. You lead eight "Companions of the Lance" through the land of Dragonlance, acquiring valuable allies in your quest.

*Dragons of Flame* is available from Electronic Arts (1810 Gateway Drive, San Mateo, California 94404), distributed under its affiliated label program.

LIZ CASEY

***The Magician*, by Jack Modjallal (DocJM) of Encino, California, is this disk's Picture of the Month. Enjoy it and the rest of the fine pictures found only on the *Gazette Disk*.**

---

Welcome to "Gazette Gallery." Each month the *Gazette Disk* features a collection of the best 64/128 artwork submitted by our readers. We pay $50 for each piece of art we accept and an extra $50 for the one selected as Picture of the Month. (You retain the rights to your work.) Send your original 64/128 art in Doodle, Koala, or any other popular format to Gazette Gallery, COMPUTE Publications, 324 West Wendover Avenue, Greensboro, North Carolina 27408. Enclose a self-addressed, stamped disk envelope if you want your submission returned. We want to see your best work today!

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C64C

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- Commodore C-64/C w/Excellerator Plus FSD-2 Disk Drive
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| 1764 Expansion Module | $129.95 | XETEC S. Graphix Sr. Interface | $49.95 |
| CARDCO G-WIZ Interface | $49.95 | XETEC Supergraphix Gold | $74.95 |
| C-64/C-64C Power Supply | $29.95 | XETEC Lt. Kemal 20MB Hard Drives for: | |
| C-1670 Modem | $79.95 | C-64C, C-128 & 128D | $549 |
| COMMODORE 1351 Mouse | $49.95 | XETEC 40MB HD for 64C, 128 & 128D | $699 |
| Excellerator Plus Power Supply | $39.95 | C-128 Power Supply | $79.95 |

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- **Built-in real time clock automatically time and date stamps all files.**
- **Compatible with Amiga, IBM and Macintosh systems for convenient upgrading.**
- **Connects easily to the serial bus, leaving ports open for use with cartridges, REU's and RAMLink.**
- **Supports all serial and JiffyDOS protocols, plus parallel interface for connection to RAMLink.**
- **Easy-to-use utilities allow backing up and copying files to and from 1541, 1571, or 1581 drives.**
- **Supports an unlimited number of true subdirectories which share all blocks within a partition.**
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- **Supports CMD HD Series Hard Drives and RAMLink.**
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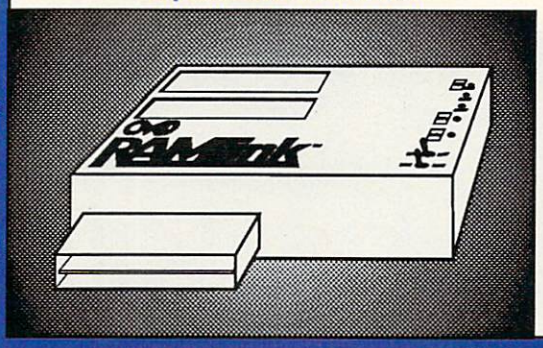
# RAMLink™

**Power-backed REU interface and expandable RAM Disk**



## What is RAMLink?

RAMLink is a multi-purpose hardware interface designed to overcome the limitations of existing RAM expansion units (REUs). RAMLink delivers the performance and compatibility lacking in past REU's by incorporating CMD's proprietary RL-DOS and advanced features into a compact unit which allows most software to utilize Commodore 1700 series REU's, GEORAM, PPI's RAMDrive, and CMD's RAMCard as if it were a disk drive. Optional RAMCard installs internally and can be used alone or in combination with the storage of an external REU for a maximum capacity of 16 Megabytes.

- **Supports Commodore 1700, 1764, 1750, Berkeley Softworks GEORAM and PPI's RAMDrive.**
- **Optional RAMCard allows RAMLink to be used as a RAM Disk with or without a separate REU. User Expandable from 1 Mb to 16 Mb using standard SIMMs.**
- **Pass-thru connector allows use of cartridge port peripherals such as utility cartridges.**
- **Reset, Disable, Direct Access mode and SWAP functions are all standard features.**
- **RAM port provides power back-up to REU's.**
- **Parallel port provides ultra-fast data transfer when connected to CMD HD series hard drives.**
- **Optional battery backup unit protects against power outages.**

| | | | |
|---|---|---|---|
| RAMLink (w/out internal RAM) | $149.95 | RAMCard w/ (1 Mb) | $149.95 |
| RAMLink w/ RAMCard (1 Mb) | $259.95 | RAMCard w/(2 Mb) | $239.95 |
| RAMLink w/ RAMCard (2 Mb) | $349.95 | RAMCard w/ (3 Mb) | $329.95 |
| RAMLink w/ RAMCard (3 Mb) | $439.95 | RAMCard w/ (4 Mb) | $419.95 |
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**Shipping:** US: **$10.00** (UPS), **$18.00** (2nd day), COD add **$4.00** Canada **$20.00**

## POWERFUL FEATURES MAKE RAMLINK AND RAMDRIVE USEFUL AND AFFORDABLE

- Allows vast amounts of commercial software, including GEOS, to access your REU as a high-performance RAM Disk.
- RL DOS performs up to 20 times faster than Commodore RAMDOS and provides full DOS command compatibility.
- Up to 32 1541/1571/1581 emulation or Native mode partitions.
- Separate power supply eliminates RAM data loss when turning off the computer; battery backup protects against power outages.
- Includes built-in JiffyDOS Kernal routines for high-speed disk access with JIffyDOS equipped disk drives.
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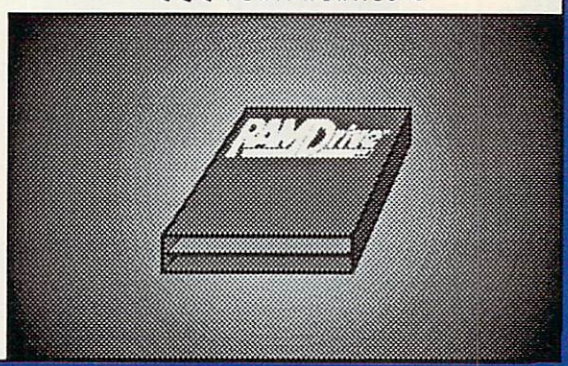

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# TAKE A SC

# AN AT THIS

THREE GERMAN IMPORTS—A HAND-HELD SCANNER, A DESKTOP PUBLISHING CARTRIDGE, AND A CHARACTER EDITOR—MAY CHANGE YOUR MIND ABOUT DESKTOP PUBLISHING ON THE 64.

Desktop publishing and the 64? Anyone who has performed professional-level desktop publishing could be excused for doing a double-take. The fact is that the 64 only has one drawback when it comes to placing graphics and formatted text on paper: its severely restricted memory.

In the days when the 64 was first introduced, memory was not a problem. Most programs were text-based and RAM-frugal. New users were grateful to have any graphics capability at all. A lack of memory is the root cause of much of what is good and bad about the 64. On the one hand, there isn't much room for storing data and code when they aren't in use, which means that they must reside on disk. On the other hand, tight memory restrictions make programmers more efficient. Sloppy programmers don't last long in the Commodore arena. They quickly move on to the world of the PC, whre owners are programmed to add megabytes of memory at a whim. The 64 has no space to waste. ▷

ROBERT BIXBY

While the memory continues to be a roadblock, the processor is a good one. Most people unfamiliar with the Commodore 8-bit line have missed out on the fact that the 6510 is actually a very capable chip.

One solution to the RAM problem is geoRAM, which was reviewed in these pages about a year ago. Scanntronik's *Pagefox,* a desktop publishing package newly imported from Germany, takes a similar approach by providing an additional 100K of RAM for its own use. *Pagefox* avoids yet another of the 64's drawbacks by coming etched in the ROM of the same cartridge that contains the expanded memory. This avoids the necessity of loading the program from the escargotesque Commodore disk drive.

*Pagefox* is not a single program, but like all other desktop publishing programs, it contains several modules, including a good monochrome graphics package, a text editor, and a formatter that can integrate graphics and automatically format text into columns.

### A Professional Look

If you're really a fan of desktop publishing on the 64, Scanntronik offers two other options that have the potential of making your efforts look professional: a hand scanner and a character editor, known respectively as Handyscanner 64 and *Character Fox.*

A scanner is a device that can import text and graphics directly into a computer. It's different from a digitizer like ComputerEyes in that it does not require a camera. It is used primarily for importing two-dimensional images, while a digitizer can be used with three-dimensional subjects.

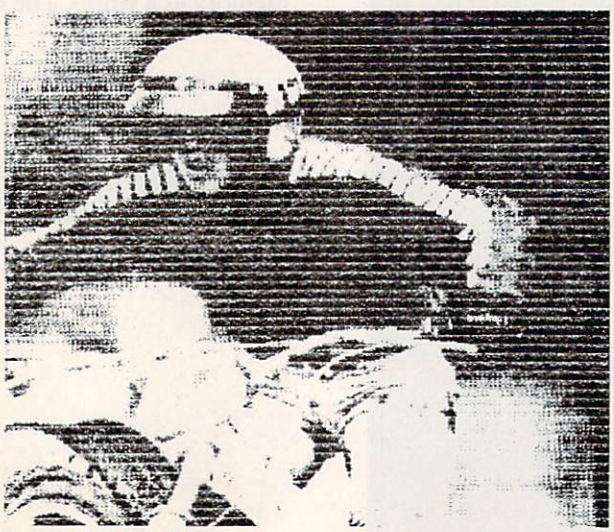
A hand scanner is not used to scan hands, as one person suggested, though it could be used for that. It's called a *hand scanner* because it's small enough to fit in a person's hand. Most professional-level scanning units look like photocopiers or fax machines. They generally take up a lot of desk space and scan whole pages at a time. A hand scanner is about twice as big as a mouse. It's perfect for use with the 64 because it will only scan an image about four inches wide and a few inches high—which quickly fills all available memory in the 64. Larger images can be scanned by reducing the scanner's sensitivity, but these images are usually unrecognizable.

The hand scanner and character editor will be discussed later. For now let's look closely at *Pagefox.*

### Design a Page

To be blunt, when I sat down with *Pagefox,* I didn't find it as intuitive as *geoPublish,* but with a little practice, I found I could accomplish some of the same tricks while avoiding the overhead of loading GEOS. *Pagefox* occupies a middle range between *geoPublish* and *Outrageous Pages,* another page-formatting program that, despite its capabilities, actually lived up to its name by outraging many of its users and was quickly withrawn from the market.

**PASS THE SCANNER OVER A PHOTOGRAPH, CHECK THE RESULTS, AND THEN PRINT IT.**



One of the things that made *Outrageous Pages* difficult to use was its idiosyncratic user interface. *Pagefox* also takes a tremendous risk by asking users to forget everything they know about operating system interfaces and start learning a new one. It's more than some people can bear. In my opinion, now that GEOS is widely used, programmers should turn to it and stop reinventing the wheel. Every new program shouldn't require reeducation.

On the other hand, *Pagefox* didn't just suddenly appear, as did *Outrageous Pages.* The heart of the program was available in different German versions known as *Printfox* and *Hi-Eddi,* so the designer has had a chance to shake out the bugs in the European market. In this latest version, the operation is fairly smooth. In fact, many of my criticisms of *Pagefox* have to do with its incomplete translation from the German version. This will be covered later.

*Pagefox,* true to its name, is geared for designing the single page. It's capable of chaining multiple pages at print time, but each page is discrete. There's no way to flow text from a column on one page to a column on another without creating discrete text files.

*Pagefox* contains a complete text editor, though it can only work with files of up to 9000 characters. The reason is, as the manual points out, "More than 9000 characters you won't get on one page." (The page size is 640 × 800 pixels—enough to fill a standard sheet of paper.)

The text editor sports search-and-replace. The search-and-replace supports wildcards, identified as *jokers* in the manual. There's no insert mode; the text editor is locked permanently in overwrite mode. The delete key is a true delete key, like on the PC. It draws in characters from the right of the cursor and deletes them. The f7 key is used as a backspace/delete key, erasing characters from the cursor to the left.

*Pagefox* also features a Caps Lock key similar to that found on the PC

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*continued on page G-8*

keyboard. The program accepts imported text in ASCII, PetASCII, and screen code format as used by *SpeedScript*. If your word processor supports any of these formats, you won't need to use *Pagefox*'s text editor for your text.

The program provides good-looking close quotation marks (”), but it has no way to enter open quotation marks (“). Where you might expect to find open quotation marks, you will find close ones lowered to the baseline.

*Pagefox* can do some limited hyphenation, though the manual is unclear on this point. Evidently, if you want a hyphen to appear in the middle of a word, you must capitalize the letter before which the hyphen may fall. When the word is printed out, the capitalization is removed and, if the word falls in the hyphenation range at the right margin, it will be broken according to your wishes. There is another method, using a dictionary-style hyphenation and embedded codes, that doesn't appear to be as reliable as inserting capital letters at paragraph breaks. The manual states in more than one place that the automatic hyphenation is based on German grammar, so if you happen to be writing in some other language, hyphenation (or “syllabification”) may not work.

### Translate That Again

To do the program justice, the manual needs to be translated into real English instead of the pidgin English in which the German translator left it: “But even with all these simplifications you won't be able to control whithin [sic] minutes such a complex and effecient [sic] program like the *Pagefox*. Especially as a beginner for DTP you will need a few hours time to become well acquainted with the different program parts, before you are able to print out your first pretentious work.”

Any of us who have read the instructions provided with Pacific Rim stereos, watches, and calculators can follow the meaning of this kind of text, though the awkwardness and idiosyncrasies of the translation will probably make the user smile for a while. Then, the user begins to go crazy. The effect of reading page after page of text that ignores syntax and is ignorant of the English idiom is like having your skull half-full of ginger ale.

Desktop publishing is so complicated, even at its simplest, that a friendly, lucid manual is a minimum requirement. (That's another reason for my preference for *geoPublish*.) In the words of the manual, “This is especially with the C 64 are not so easy. . . .”

### A Foxy Editor

*Character Fox* is a character/font editor. It contains an editing field familiar to those who have worked with sprite and character editors. Its manual is written in an interesting way: The author takes on the persona of the program, explaining its actions as if they were his own.

*Character Fox* can work with images scanned with the hand scanner (described below), allowing you to import text from a book, magazine, or clip-art collection, modifying it into your own typeface. This one capability is enough to recommend it. I only wish the creator of these programs had made them GEOS-compatible so the fonts would be applicable beyond the world of *Pagefox*.

### Handyscanner 64

As mentioned earlier, scanning is a method for bringing real-world art and text directly into the computer. There are three basic types of scanning equipment: a flat-bed scanner that resembles a photocopy machine, a page-fed scanner that resembles a fax machine, and a hand-scanner that resembles a mouse with a severe thyroid condition.

The Handyscanner 64 allows you to scan small images. It operates with software that closely resembles the graphics part of *Pagefox*. The scanner itself emits a greenish light from a bank of LEDs (Light-Emitting Diodes). When you press the scan button on top of the scanner, the lights become a little brighter. Since these LEDs would represent a significant power drain on a 64's power supply, the scanner comes with its own power transformer. The scanner attaches to the user port of the 64 with a small interface device, into which you also plug the power cord from the transformer.

With the power cords from your computer, disk drive, monitor, printer, and hand scanner, you should think seriously about investing in a multioutlet surge-protector power strip, if not rewiring your computer room to provide a dozen outlets at your desk.

The scanner can be set to scan in pure black-and-white with no attempt at shading, or to provide one of three levels of dithered shading. Dithering is a technique of approximating a shade of gray by placing random dots in the area. A darker area has more dots; a brighter area, fewer dots.

In addition, Handyscanner provides you with separate brightness and contrast adjustments. Unlike many hand scanners, the scanner itself offers no dot-per-inch setting. This is set through the software. You can set any sensitivity between 33 and 300 dots per inch (dpi), but any sensitivity less than 200 dpi will provide a very poor scan.

The Handyscanner provides a simple, handy way to import real-world images into the 64. I was skeptical that the Commodore's graphics capabilities were up to handling scanned images. I work a great deal with scanned images on the PC. They take up a lot of disk space and are time-consuming to manipulate. Furthermore, a hand scanner is tricky; you have to pull it down the page at a perfectly uniform speed and in a perfectly straight line to prevent distortion. To my surprise, Handyscanner provided consistently good scans despite my shaky hands and a sticky scanning surface. The hardware must cope with minor inconsistencies better than the Logitech scanner I am accustomed to using.

The software associated with the Handyscanner compresses the images efficiently, although interpreting the scanned image and bringing it up on the screen take several seconds.

### Conclusions

When I bought my 64, my plan was to use its graphics and text-editing abilities to save myself the labor of endlessly recreating graphics and rewriting text. It worked better than I had imagined. If I had also been able to bring real-world images into the machine, I would have been ecstatic. The foundation of the value of *Pagefox*, in my estimation, is the Handyscanner. Other, better, alternatives exist in word processing, graphics, and desktop publishing than *Pagefox*. But, as far as I know, only one scanning alternative is available for the 64—the Handyscanner—and, since it only works with *Pagefox* and *Character Fox*, it makes these products worth having as adjuncts to its power. ⊡

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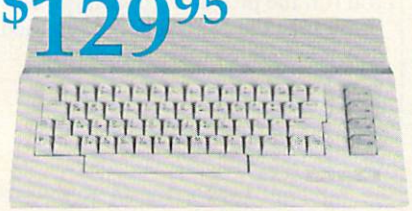

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Circle Reader Service Number 118

# PROGRAMMER'S PAGE

RANDY THOMPSON

This month I've compiled some reader tips that are sure to catch your attention. I like to call them *dazzlers* because of their flashy, graphic appeal. Try a few and see what you think.

### Flash!

After running the following program, all shifted characters displayed on the 64's screen flash wildly. By taking advantage of the computer's extended color background mode, this machine language routine toggles the characters' background colors, making the letters appear to flicker and glow.

```
MQ 100 FOR I=679 TO 758:READ D
       :POKE I,D:NEXT
PB 110 SYS 679:POKE 251,1:POKE
        252,6:POKE 253,3 :POKE
        53281,0:POKE 53280,0
XF 120 POKE 53283,15
BE 130 PRINT"{CLR}WITH THIS PR
       OGRAM ANY {YEL}SHIFTED
       {CYN} CHARACTERS"
JJ 140 PRINT"{11 SPACES}ARE HI
       GHLIGHTED"
BD 150 REM POKE 251,SPEED OF F
       LASH
KB 160 REM POKE 252,COLOR 1
QG 170 REM POKE 253,COLOR 2
HK 180 DATA 120,169,192,141,20
       ,3,169,2,141,21,3,173,1
       7,208,9,64
PS 190 DATA 141,17,208,169,0,1
       33,162,88,96,165,162,19
       7,251,240,3,76
SB 200 DATA 49,234,173,252,3,2
       01,1,240,4,201,2,240,17
       ,165,252,141
FJ 210 DATA 34,208,169,2,141,2
       52,3,169,0,133,162,24,1
       44,225,165,253
SC 220 DATA 141,34,208,169,1,1
       41,252,3,169,0,133,162,
       24,144,208,2
```

You can change the speed at which the letters flash by POKEing a value 0–255 into memory location 251 after running the program. The lower the value, the faster the characters flash—except in the case of the value 0, which is the *slowest* setting possible (1 is the fastest).

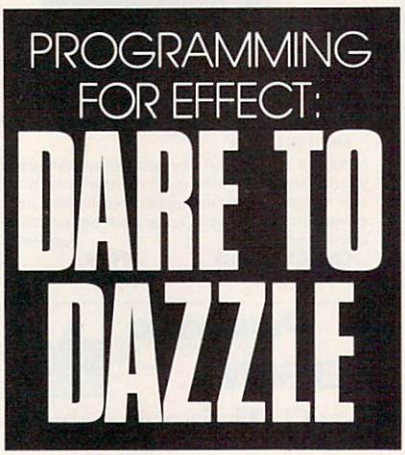
To change the background color of the flashing characters, POKE two different color values into locations 252 and 253. The machine language routine will alternate between these two colors to create the flashing effect.

You can easily disable the flashing by turning off extended background color mode. Turn it off with POKE 53265,PEEK(53265) AND 191. If you want the effect to run again, turn it back on with POKE 53265,PEEK (53265) OR 64.

JOEL SUDQUIST
STERLING HEIGHTS, MI

### Screen Scrambler

Here's a routine that scrambles and then clears your computer screen. It works by decreasing the value of each




character's screen code until all of the characters turn into spaces. It's an eye-catching way to remove information from the screen, and it works with the 64 and the 128 in 40-column mode.

```
MS 10 AD=4864
QQ 20 FOR I=0 TO 49:READ D:POK
      E AD+I,D:NEXT
GS 30 DATA 169,4,133,251,160,0
      ,132,250
FJ 40 DATA 132,252,177,250,201
      ,32,240,15
AX 50 DATA 162,1,134,252,201,0
      ,208,2
QC 60 DATA 169,33,170,202,138,
      145,250,230
KQ 70 DATA 250,208,231,230,251
      ,165,251,201
KF 80 DATA 8,208,223,165,252,2
      01,0,208
QH 90 DATA 207,96
```

After you've run the program, execute SYS 4864 to clear the screen. For the best results, get a bunch of characters on the screen first. For such a simple concept, the effect is really quite impressive.

By default, this program stores its screen-clearing machine language routine in memory at 4864–4913. By changing the value assigned to AD in line 10, you can move the routine to any 50-byte area of free memory. Just remember to change your SYS statements to reflect this change. For example, if you move the routine into the 64's cassette buffer located at 828, you must enter SYS 828 to invoke the screen scrambler.

STACY OLIVAS
GRAHAM, WA

### 128 Screen Split

For an interesting example of scrolling the 128's split graphics screen, type in and run the following demo program. Don't clear the graphics screen before you run the program. In fact, it's best if you turn the computer off and then on again before entering the listing.

```
PH 10 GRAPHIC 2,0,0
EB 20 FOR I=48 TO 249
QS 30 POKE 2612,I
QG 40 NEXT
MR 50 FOR I=249 TO 48 STEP -1
QA 60 POKE 2612,I
RJ 70 NEXT
QF 80 GOTO 20
```

This program opens a hi-res graphics screen and smoothly scrolls it down over the text screen and back up again. It does this by altering memory location 2612. This location holds the raster number used by the interrupt routine that controls the GRAPHIC 2 and GRAPHIC 4 split screen.

STEVE SCHOWIAK
GIESSEN, WEST GERMANY

*"Programmer's Page" is interested in your programming tips and tricks. Send all submissions to Programmer's Page, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We'll pay $25–$50 for each tip we publish.* ⊡

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# BEGINNER BASIC

LARRY COTTON

Happy holidays! In the past few months, we sharpened our BASIC skills with a program that demonstrated how to create and control a sprite, or Movable Object Block. The 64 is not restricted to a single sprite, however; it can simultaneously maneuver up to eight sprites in BASIC.

When dealing with more than one sprite, things get a bit more complicated. Before we actually create some sprites in shapes that are appropriate for the season, here's what we have to do:

- Create shape data for the sprites.
- Tell the computer where to look for the data.
- Locate the sprites horizontally and vertically.
- Determine their sizes.
- Assign them one or more colors.
- Turn them on.

Last month's program contained 63 pieces of data which defined our single sprite's shape. For each additional sprite shape, 63 more pieces of data are required to be POKEd into memory registers.

In addition, you must tell the computer where to look for the data. Memory registers 2040–2047 are the eight sprite data pointers; they tell the computer in which memory registers the sprite shape data can be found.

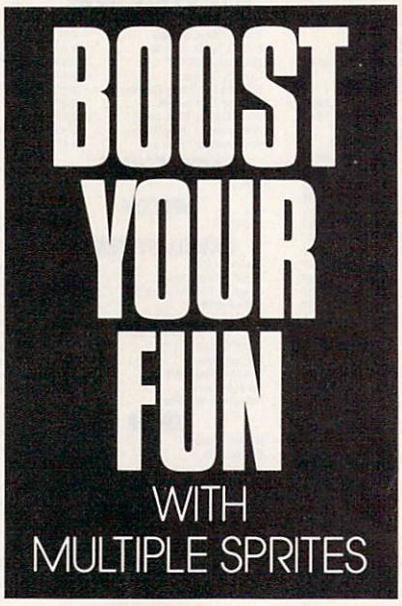
When we located sprite 0's shape-defining data from 12288 to 12350, we POKEd 2040 with 192. The sprite data pointers and their corresponding data locations are detailed below.

| Sprite | Data Pointer | Value | Data At |
|---|---|---|---|
| 0 | 2040 | 192 | 12288–12350 |
| 1 | 2041 | 193 | 12352–12414 |
| 2 | 2042 | 194 | 12416–12478 |
| 3 | 2043 | 195 | 12480–12542 |
| 4 | 2044 | 196 | 12544–12606 |
| 5 | 2045 | 197 | 12608–12670 |
| 6 | 2046 | 198 | 12672–12734 |
| 7 | 2047 | 199 | 12736–12798 |

Each sprite doesn't need unique data; one may share the data of another. If you want, say, sprite 7 to have the same shape as sprite 0, you would POKE 2047 with 192.

When you're working with three sprites or fewer, there are other popular locations in which to put sprite shape data. When you use them, the same pointers are used, but different values are POKEd there.

| Sprite | Data Pointer | Value | Data At |
|---|---|---|---|
| 0 | 2040 | 13 | 832–894 |
| 1 | 2041 | 14 | 896–958 |
| 2 | 2042 | 15 | 960–1022 |




This month we'll begin a short program for the 64 that should give you an understanding of how to handle more than one sprite. Be sure to save lines 10–90 because we'll add to them next month. First clear the screen and color the screen white:

```
10 PRINTCHR$(147):POKE53280,
   1:POKE53281,1
```

Next, because we'll use sound with our sprites (since the 64 is so musically gifted, I almost always include sound in my programs), we must clear the sound-producing chip and set the maximum volume, envelope, and a frequency for voice 3. These have been discussed in previous columns.

```
20 FORT=54272TO54295:POKET,
   0:NEXT:POKE54296,15
30 POKE54277,8:POKE54278,255:
   POKE54287,3
```

Read in the sprite shape data:

```
40 FORJ=12288TO12350:READD:
   POKEJ,D:NEXT
50 DATA0,16,0,0,0,0,0,16,0,0,56,0,0,
   124,0,0,254,0,0,56,0,0,124,0,0,254,
   0, ,255
60 DATA0,3,255,128,0,254,0,
   1,255,0,3,255,128,7,255,192,15,
   255,224,0,56,0, ,56
70 DATA0,0,254,0,0,0,0,
   0,0,0
```

Because we're using only one sprite shape (I won't tell you what it is yet), we can point all eight data pointers to the same data (from 12288 to 12350).

```
80 FORT=2040TO2047:POKET,
   192:NEXT
```

Define constants:

```
90 V=53248:X=157:Y=129:K=255:
   V1=54276:VF=54273:M=79
```

V is the important first memory register of the 64's sprite-controlling chip. Many other registers will be addressed as an offset of V. X and Y are the starting horizontal and vertical coordinates for all eight sprites. V1 and VF are voice 1's control and high-frequency registers, respectively.

We'll stop here for this month. Next month I'll explain M and K and finish the program.

Now, you may recall that way back in March I challenged you to send me some examples of programs that use NOT. Thinking that the mailbox wouldn't yield many responses, I shrugged off NOT as a keyword of minimal interest.

I was wrong. Apparently, there

are those of you who actually use NOT in your BASIC programming. Several people wrote to explain how they use the NOT statement in various ways. Thanks for the feedback, which I always welcome.

Walt Schumacher, a computer teacher at St. Ferdinand School in Florissant, Missouri, sent in perhaps the clearest and best documented use of the NOT logical operator. He writes:

"My use of NOT stems from seeing its real-world analogy: the ON/ OFF push button. To utilize this function, one must be aware that on Commodore machines, 0 stands for false, and −1 stands for true. I used this feature recently to toggle between upper- and lowercase for a keyboard practice program."

Here's a slightly revised version of Walt's program.

```
10 BIG=0:CASE=53272: UP=21:DOWN=23
20 PRINT CHR$(147)
30 FOR T=1 TO 11:PRINT:NEXT
40 PRINT TAB(10)"WATCH THIS MESSAGE!
150 BIG=NOT BIG:REM TOGGLE
160 IF BIG THEN POKE CASE, UP
170 IF NOT BIG THEN POKE CASE, DOWN
180 FOR DELAY=1 TO 400:NEXT
190 GOTO 150
```

Line 10 defines the variable BIG and the constants CASE, UP, and DOWN. In the 64 and 128, memory register 53272 controls, among other things, whether your monitor or TV screen displays upper- or lowercase lettering. POKEing 21 (UP) or 23 (DOWN) to that register determines whether the computer prints in upper- or lowercase, respectively.

Lines 20–40 clear the screen, center the cursor vertically on the screen, and print a message.

Line 150 contains the ON/OFF toggle switch. BIG takes turns having the value 0 or −1. If BIG is 0, for instance, NOT BIG changes it to −1, and vice versa.

Lines 160 and 170 evaluate BIG and alternately POKE 53272 with either 21 or 23. If BIG=0, the message switches to lowercase; if BIG=−1, the message switches to uppercase. Thanks, Walt, for shedding more light on NOT. ⊡

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# D'IVERSIONS

FRED D'IGNAZIO

## MAKING FRIENDS WITH COMPUTER AGENTS

Eight years ago I wrote a column in *COMPUTE!* magazine detailing how people could program their own "computer friends" inside their home computers. A computer friend was a program written in BASIC. When the program began running, the friend would come to life inside your computer and have a conversation with you. You could name the friend, teach it your name, and give it personality traits, special interests, and lovable quirks. You could even program the friend to tell your favorite jokes.

The idea for a computer friend came from my habit of naming my cars. Over the years I have gone through several cars, each with its own name (like George, Eric the Orange, Mishy Kiku, and Peppy) and each with its unique personality. I began thinking that if cars could have names and personalities, then so could computers. You can decorate your car and give it a personality all its own, so you should be able to program a computer to act as your friend.

I was also inspired by a famous artificial intelligence (AI) program called *Eliza* written by MIT computer scientist Joseph Weizenbaum. When you sat down at the computer, *Eliza* would act like a psychoanalyst trying to get to know a new patient. The session would start with *Eliza's* asking you some friendly questions, such as *What is your name?* and *Do you have any brothers or sisters?*

You would type in answers, and *Eliza's* questions would start getting more and more personal. Before you knew it, you would be telling "her" all sorts of extremely private things, such as how you felt about your mother and father, if you had ever been mean to your cat, and other secrets. Even world-famous computer scientists would sit down and begin chatting with *Eliza,* telling her embarrassing personal tidbits that they wouldn't dare share with another human being.

In my column I challenged *COMPUTE!*'s readers to invent their own computer friends. The readers' response was unbelievable. I received hundreds of letters and over five dozen disks in the mail, each with its own customized "Friend" program written in BASIC and each with its own special design. Many of the programs printed out a picture of the computer friend. Some of the computer friends were good at reciting poetry, puns, and odd bits of trivia. Others had a special knowledge of comic-book heroes, offbeat movies, science-fiction books, and rock music.

Each time I ran one of the readers' friend programs, I felt I was meeting a new person, and in a funny way I knew that the friend was a reflection of the human who invented it (just as my cars were a fun house–mirror reflection of me). I came to think of the computer friends as if they were sidekicks of their inventors, like the dummy Charlie McCarthy and his creator Edgar Bergen or Kermit the Frog and Jim Henson.

I wrote several columns featuring many of the best computer friends that readers sent in. Interest in computer friends was high for many months, but eventually it faded.

Recently a new type of computer friend has become popular. These new friends are called *agents.* An agent is a program, as the computer friend was. Its job is to "live" inside your computer. Whenever the computer is turned on, the computer agent does special chores for you.

What chores does an agent do? It can automatically sign onto your online information services and bulletin boards and assemble a personalized electronic newspaper for you out of news stories and data it has collected overnight, concerning topics especially interesting to you. It can print out this newspaper, and you can read it at the breakfast table before you leave for school or work.

What else can an agent do? If your computer were wired into some household appliances, your agent could do things like shut the house lights off and on when you wanted, start coffee brewing in the morning, or turn on the VCR and TV whenever your favorite program came on. It could play your stereo system, print out messages to remind you of your best friends' birthdays, and even play games with you.

Thanks to the growing popularity of agents, it's time to take another look at computer friends. What kind of agent or friend would you invent? Would your agent have human characteristics, or would it resemble an animal, a robot, an alien, or something completely different? What sorts of tasks would you assign to your agent? What machines would it control for you? Would your agent have a name? A fictitious past? Some favorite computer jokes? Would your agent be reliable and trustworthy? Or fickle and unpredictable? Would it be fun-loving and a practical joker or an awful nag?

Please send me your ideas. I'll gather a few of the best ideas and publish them in one of my upcoming columns. Mail your letter to Fred D'Ignazio, COMPUTE Publications, 324 West Wendover Avenue, Greensboro, North Carolina 27408.

Meanwhile, be on the lookout for real computer agents living inside your machine. According to software publishers, agents will be designed into most of the new computer programs reaching the market in the future. When you buy a piece of software, you'll get a free, built-in agent along with it! ⊡

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# MACHINE LANGUAGE

JIM BUTTERFIELD

## THE 128 MLM: BANK ON IT

In its favor, the Commodore 128 comes with a built-in machine language monitor (MLM) with many attractive features. If a program crashes, just hold down the Run key and press the reset button. The computer will recover into the MLM so you can investigate the cause of the problem. The BASIC SYS command allows values to be preset for the A, X, Y, and status registers. BLOAD and BSAVE are big BASIC improvements.

On the negative side, 128 BASIC can relocate. Also, special code and new system calls are needed to reach data or a subroutine across banks. The interrupt has so many jobs—such as graphics, animation, and sound—that it's easy for new code to conflict with built-in operations.

The bank system makes it hard to put code higher than location $3FFF. Beginners are advised to place ML programs below $4000 and stay in bank 15. That way, you can SYS to the ML program from BASIC and use a JSR to call subroutines in the Kernal.

What happens if you try to put code at higher addresses? Suppose you wish to locate a program at $6000. The trouble is that, if BASIC stays in its normal bank 15 state, a call to $6000 (SYS 24576) wouldn't take your program to RAM but to the overlaying ROM containing the BASIC interpreter. Bank 15 configures RAM from $0000 to $3FFF, ROM from $4000 to $CFFF, I/O chips from $D000 to $DFFF, and ROM from $E000 to $FFFF. The program at $6000 wouldn't be visible.

The obvious solution—enter the command BANK 0 before the SYS call—usually ends in disaster. The SYS gets to your program, but when your program calls a Kernal routine such as BSOUT at $FFD2 for printing, the ROM's gone! Instead, the program arrives at empty RAM in Bank 0 and gets lost. Even if you somehow transfer valid program code into that area, you can't achieve output since the I/O chips are no longer accessible.

What you need is a configuration that will give you RAM from $0000 to $BFFF, Kernal ROM from $C000 to $CFFF and $E000 to $FFFF, and I/O chips in the $D000 to $DFFF slot. No bank number gives you this; bank 12 is sometimes used to produce a similar effect, but it's not the best way.

You can produce the desired configuration by a direct store to address $FF00; a value of decimal 14 stored there will do the job. But you can't do that from BASIC. That powerful POKE to address $FF00 would make the BASIC interpreter itself disappear!

The solution is to use BASIC to select BANK 0 to make your program visible so you can SYS to it. Once the program starts, it puts $0E into address $FF00, reconfiguring to the desired map. It's a good idea to restore the configuration to Bank 0 just before the program returns to BASIC, so BASIC will be there waiting when control is returned to it, thus preventing a crash. Bank 0 can be restored by storing $3F into $FF00.

Here's a simple 128 program to print HELLO! to the screen just to show how a program may be positioned above the $4000 barrier. BASIC will have set up BANK 0 before the call to $6000 (the program's location). The program's first task is to make sure the Kernal ROM and I/O chips are accessible.

```
6000  LDA  #$0E     ;"special" config
6002  STA  $FF00
6005  LDX  #$00
6007  LDA  $6018,X
600A  JSR  $FFD2
600D  INX
600E  CPX  #$07
6010  BNE  $6007
```

The string HELLO!, followed by a carriage return, is printed from a buffer to be established at $6018. Now restore the original configuration (bank 0, value $3F in $FF00).

```
6012  LDA  #$3F     ;restore config
6014  STA  $FF00    ; ("BANK 0")
```

You return to BASIC with the RTS command. It seems a little odd that you can go back to BASIC when the Bank 0 configuration has switched out the BASIC interpreter. Don't worry. The mechanism of the SYS call takes care of all the bank arrangements.

```
6017  RTS
```

The text to be printed ("HELLO") must be stored in memory.

```
6018 48 45 4C 4C 4F 21 0D 00
```

It takes a while to get used to the architecture of the 128, but with careful planning it all works well.

You could enter the program using the built-in monitor, but here's a BASIC program to do the job.

```
100 DATA 169,14,141,0,255,162,0
110 DATA 189,24,96,32,210,255
120 DATA 232,224,7,208,245
130 DATA 169,63,141,0,255,96
140 DATA 72,69,76,76,79,33,13
150 BANK 0
160 FOR J=24576 TO 24606
170 READ X:T=T+X
180 POKE J,X
190 NEXT J
200 IF T< >3605 THEN STOP
210 BANK 15
300 BANK 0
310 SYS 24576
320 BANK 15
```

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# FEEDBACK

## QUESTIONS FROM OUR READERS

### A Dynamic Loader

Recently, I was going through one of your back issues and found a program similar to the one below.

```
CE 10 POKE 184,2:POKE 185,0:PO
      KE 186,8
KG 20 INPUT "FILENAME";N$:IFLE
      N(N$)>16THEN20
FQ 30 INPUT "STARTING ADDRESS"
      ;S:IFS<0ORS>65535THEN30
KG 40 POKE 183,LEN(N$):POKE 18
      7,0:POKE 188,2
XK 50 FOR I=1 TO LEN(N$):POKE
      {SPACE}511+I,ASC(MID$(N$
      ,I,1)):NEXT I
XK 60 POKE 780,0:POKE 781,S-IN
      T(S/256)*256:POKE 782,IN
      T(S/256)
CE 70 SYS 65493:IFST<>64THENPR
      INT"FILE NOT FOUND"
```

It POKEs a few numbers into memory and then SYSs to an address. When I run it, it loads a program into a selected memory area.

I've seen programs similar to this one in other magazines. Could you explain to me the principles behind this program and how it might be used?

JERRY HALLETT
STOCKTON, NY

*The program uses the Kernal LOAD routine to load a file beginning at a specific address. The three POKES in line 10 set the logical file number, secondary address, and device number as you would for an OPEN command. (The equivalent OPEN command would be OPEN 2,8,0.) Lines 20 and 30 request the filename and the file's starting address from the user. The first POKE in line 40 sets the length of the filename, and the other two represent the address (512) of the filename in low-byte/high-byte format. Line 50 actually stores the filename in locations 512–527.*

*Line 60 sets the 6502's registers to prepare for calling the Kernal LOAD routine. The first POKE sets the accumulator to 0 to tell the routine to perform a load. (Placing a 0 in the accumulator would cause the routine to verify.) The next two POKEs store the low and high bytes of the starting address into the X and Y registers, respectively. Line 70 calls the Kernal routine and then checks for an error after it has returned.*

*You didn't mention a save routine in your letter, but we've included one to demonstrate how to call the Kernal's SAVE routine from BASIC.*

```
QH 10 DV=8:INPUT "FILENAME";N$
      :OPEN15,DV,15:OPEN1,DV,1
      ,N$+",P,W"
JA 20 INPUT#15,EN:IFEN<>0THENP
      RINT"DISK ERROR":GOTO70
FQ 30 INPUT "STARTING ADDRESS"
      ;S:IFS<0ORS>65535THEN30
SR 40 INPUT "ENDING ADDRESS";E
      :IFE<SORE>65535THEN40
KS 50 POKE 193,S-INT(S/256)*25
      6:POKE 194,INT(S/256)
PE 60 POKE 174,E-INT(E/256)*25
      6:POKE 175,INT(E/256):SY
      S62957
KM 70 CLOSE1:CLOSE15
```

*Line 10 inputs the filename from the user and attempts to open it. Line 20 checks to see whether the open was successful. Lines 30 and 40 get the starting and ending addresses for the file from the user. Line 50 sets a pointer to the starting address while line 60 sets the pointer to the ending address and calls the routine. Line 70 closes the file after the save.*

### Big CPU in the Sky

In your recent article "Into the Crystal Ball" (June 1990), many people blamed software companies or the market for the declining interest in the 64. They blamed everything except what's really wrong. It's hardware, not software or the market. The main problem is that the 64 isn't attractive anymore. The 64 has already died and gone to the big CPU in the sky.

I've had a 64 for close to ten years, but it lacks hardware capabilities. It should be taken into the factory and given a total overhaul. When it comes out, it should have 256K of ROM, an operating system that takes up minimal space in memory, a faster CPU, 64K or 128K of video RAM, a ramdisk, and a built-in program that would still let it run conventional 64 software.

It may sound like I have MS-DOS in mind, but the 64 has to have some sort of hardware enhancement and a true operating system.

C. SYMONDS
BECKENHAM, W.A.
AUSTRALIA

### No Joy

I am writing out of sheer frustration regarding your *MLX* program. I have tried to enter this program with and without *The Automatic Proofreader,* and in both instances line 130 gives no joy. Please help!

It is also noted that *The Automatic Proofreader* program printed in my December 1989 *Gazette* is different from the ones printed after. I have tried to load both, and only the December one works. The big question is, is it me or my overgrown calculator?

ALAN CULPH
MOOROOLBARK, VIC.
AUSTRALIA

*Alan, we checked line 130 of* MLX *with several versions of* The Automatic Proofreader, *and we got the correct checksum with all of them. The handwritten sample you provided was missing an equal sign after the L$, but we have no way of knowing whether it was absent from your typed-in version or not.*

*Line 130 does contain several points for possible confusion. Where it says S$=" ", there is one space between the quotation marks. It is typed by pressing the quote key, the space bar, and then the quote key again. Where it says T$="{13 RIGHT}", press the quote key and then tap the right Crsr key 13 times before pressing the quote key again. If you press the space bar 13 times, the final result may be the same but your checksum will be different. Be sure to read and familiarize yourself with the instructions on how to type in Gazette programs.* ▷

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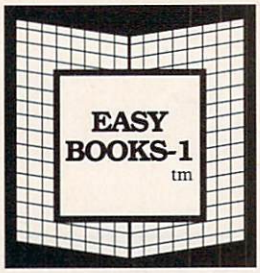


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# FEEDBACK

The Automatic Proofreader *has undergone several revisions over the years, and it was changed slightly in January 1990 when we dropped reference to the Plus/4 and 16 computers. It works the same as the earlier version, but you must be careful to enter it correctly since the* Proofreader *can't check itself.*

### So It's Your Birthday!

I am 72 and not at all interested in games, but I'm having trouble with a program that shouldn't be too complicated for you smart young fellows. I have a list of 86 names, addresses, and birthdays from my mailing label program, and I'd like a utility to go through the data and select the names and birthdays of all the people born in a particular month. It would be nice to have it print them to the screen or printer.

DON SHEA
LAKE CITY, FL

*Here's a simple program that should do what you want, Don. It reads six pieces of information from data statements about each person. The first name, last name, address, phone number, and birth date are all single items; but notice that the city, state, and ZIP code are also listed as one item. For the program to work properly, make certain that you have six entries separated by commas for each data statement. Use a space if you need to leave an item blank.*

*Once you've entered your data statements, change the value of MAX in line 10 to equal the number of names on your list. Our sample program has only two people; therefore, MAX=2. If you have 86 names on your list, then MAX=86.*

```
GM 10 MAX=2:DIM A$(MAX),B$(MAX
      ),C$(MAX),D$(MAX),E$(MAX
      ),F$(MAX),MO$(12)
GE 20 FORX=0TO11:READMO$(X):NE
      XT
PK 30 FOR X=0TOMAX-1:READ A$(X
      ),B$(X),C$(X),D$(X),E$(X
      ),F$(X):NEXT
FE 40 PRINT"{CLR}{WHT}{3 DOWN}
       ENTER MONTH (EXAMPLE:JA
      N)";:INPUT M$
FD 50 IF LEN(M$)>3 THEN 40
MF 60 PRINT"{2 DOWN} PRESS (P)
       FOR PRINTER OR "
PQ 70 PRINT"{7 SPACES}(S) FOR
      {SPACE}SCREEN OUTPUT"
ME 80 GET P$:IF P$=""THEN 80
PB 90 FORX=0TO11:IF M$=MO$(X)
      {SPACE}THEN 120
MH 100 NEXT
CM 110 GOTO40
KM 120 FOR X=0TOMAX-1:IF LEFT$
       (F$(X),3)=M$ THEN GOSUB
       170
XJ 130 NEXT:PRINT "{2 DOWN}
      {RVS}PRESS ANY KEY{OFF}
      "
ER 140 GETA$:IFA$=""THEN 140
CR 150 GOTO40
BG 160 REM ** PRINT ROUTINE **
KB 170 IF P$="P"THENOPEN4,4:CM
      D4
SX 180 PRINT:PRINT
RJ 190 PRINT"NAME:{2 SPACES}";
      A$(X);" ";B$(X)
XD 200 PRINT"ADDR:{2 SPACES}";
      C$(X)
BK 210 PRINT"{7 SPACES}";D$(X)
CD 220 PRINT"PHONE: ";E$(X)
PP 230 PRINT"B'DAY: ";F$(X)
RA 240 IF P$="P"THEN PRINT#4:C
      LOSE4
SG 250 RETURN
SX 260 REM ** NAMES **
PC 270 DATA JAN,FEB,MAR,APR,MA
      Y,JUN,JUL,AUG,SEP,OCT,N
      OV,DEC
PF 280 DATA JOHN A.,DOE,RT 1 B
      OX 123,SILER CITY NC 27
      344,555-0123,AUG 31
KD 290 DATA JANE B.,EDWARDS,RT
       2 BOX 334,PLANT CITY F
      L 32055,555-9876,JAN 10
KC 999 DATA JAN,FEB,MAR,APR,MA
      Y,JUN,JUL,AUG,SEP,OCT,N
      OV,DEC
JS 1000 DATA JOHN A.,DOE,RT 1
       {SPACE}BOX 123,SILER C
      ITY NC 27344,555-0123,
      AUG 31
EM 1001 DATA JANE B.,EDWARDS,R
       T 2 BOX 334,PLANT CITY
        FL 32055,555-9876,JAN
       10
```

### Scanning for Scanners

I would like to know if you can help me with a question. I would like to know if there are any companies out there that make scanners that are compatible with the 64. If there are, I'd like the address or information about them.

JOSEPH PATRICK
APO, NY

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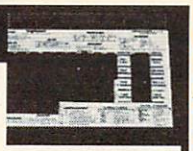

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*Good timing, Joseph. As a matter of fact,* COMPUTE *associate editor Robert Bixby takes an in-depth look at a new import from Germany. Read his Gazette article "Take a Scan at This," which is about a handy handheld scanner designed especially for the 64.*

### More about *SpeedScript*

I am wondering if there will be any *128 SpeedScript* enhancements in the future. This has been the best word processor that I have ever used. Simple, but it gets the job done. One program I'd like to see is one that would let me use *SpeedScript 128* with my second disk drive as the data disk and have the necessary POKEs to accomplish this. Also, I would like to have a program that would alphabetize the *128 SpeedCheck* files. I have done this by hand, and it tends to make the spelling checker run a little faster. I'd like the spelling checker accessed by using Ctrl-C. The word under the cursor could be checked with the main program in drive 8.

I enjoy the new format for your magazine, and I'm looking forward to each new issue. I was afraid your magazine would stop the articles on the 8-bit machines. Many people and I think there's a place for a small machine in this world. I'll be watching the pages of Gazette for any response to the ideas I have proposed.

ROBERT HARTLE
TIONESTA, PA

*Thanks for the kind words, Robert. Over the years we've been able to add a number of utilities to* SpeedScript *to make it even more useful to our readers. A few of those enhancements have come from our staff, but most of them have come as submissions from our readers. By*


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# FEEDBACK

*posting your suggestion here, you may inspire someone to develop your ideas and share their programs with us. We're always eager to see* SpeedScript *enhancements or other useful programs. Send them to the Submissions Reviewer in care of this magazine. Don't forget that we're also looking for original 64 artwork for "Gazette Gallery," our new on-disk feature.*

## EPROM Primer

I am interested in EPROM programming using the 64. I want to know how to manage the memory of a 16-kilobyte or larger EPROM. I've seen this done on cartridges.

MATTHEW HUDSON
DORAN, VA

*The EPROM (Erasable Programmable Read Only Memory) chip is a powerful tool in the programmer's arsenal. These chips hold your own programs or code on a cartridge. They can even be used as custom replacements for standard chips that come with the computer.*

*EPROMs come in several capacities, usually in multiples of 4K (16 CBM disk blocks). The hardware required for customizing and using them is relatively inexpensive and easy to use. It consists mainly of an "eraser," for reinitializing EPROMs during the process of program development, and a "burner," or programmer for putting your code into the chips.*

*There's a wide variety of cartridge formats for the 64. Some cartridge boards are little more than ROM/EPROM sockets on a plug-in card, while others are sophisticated enough to have their own logic elements. The possibilities vary widely.*

*For more information about EPROM and cartridge availability and price, as well as devices such as EPROM erasers and burners, write to Jason-Ranheim, 580 Parrott Street, San Jose, California 95112.*

## A Little Help

Several years ago our school purchased six MicroIllustrator light pens and disks produced by Tech Sketch. Recently, the pens have started to malfunction, and I would like to purchase replacements. Unfortunately, mail to this company has been returned, and no one seems to stock these pens.

I tried the Flexidraw light pens, but they didn't seem to work with the MicroIllustrator program.

Does anyone know who repairs these pens? Does anyone have an old one he or she would like to donate to a school? If you have a new one, I would buy it for a reasonable price.

JOHN SCHICK
NORWALK MIDDLE SCHOOL
64 CHRISTIE AVE.
NORWALK, OH 44857

I am desperate and don't know where to turn. I have been searching in vain for a tractor feed for a Blue Chip D12/10 (or Brother HR10) printer. I would appreciate it if anyone could point me in the right direction.

RAYMOND McALISTER
2215 S. PERKINS AVE.
INDIANAPOLIS, IN 46203

I recently purchased a PET/CBM 8032 with an 8050 dual disk drive. Does anyone have a word processing program, editing program, or spelling checker that will run on this computer? I am interested in public domain programs or software that's reasonably priced. I have tried several user groups without much luck. Please help! I really need a word processor.

JANELLE HARVEY
20 CLAY ST.
DANSVILLE, NY 14437

I have been looking for a *geoPrint* cable as sold by Berkeley Softworks until about three years ago. BSW has discontinued the product, and I am unable to locate it or the alternative Power Print Cable.

Does anyone know where I can buy either of these cables? Perhaps someone could draw me a wiring diagram so I can make one for myself.

JAMES C. LYNCH
P.O. BOX 4680
ST. THOMAS, VI 00801

*How about it, readers? Can you help these people with their needs?*

*Do you have a question, comment, or problem? Have you discovered something that could help other Commodore users? We want to hear from you. Write to Gazette Feedback, 324 West Wendover Avenue, Greensboro, North Carolina 27408. We regret that, due to the volume of mail received, we cannot respond individually to questions.* ⊡

DANNY ENGLISH

# CROWN QUEST

EXPLORE A VAST KINGDOM IN THIS ACTION/ADVENTURE GAME FOR THE 64. JOYSTICK REQUIRED.

Put on your armor and sharpen your sword! The black knight has stolen the king's crown, and it's up to you to get it back. It won't be easy. To solve this intricate puzzle, you must find your way through six castles, 16 rooms, and more than 50 maze screens.

Pick up keys to unlock castles, but watch out! The black knight is waiting for you inside one of them. You must defeat him in order to retrieve the crown, but you're not safe until you slay the dragons.

## Getting Started

*Crown Quest* is written entirely in machine language, so you'll need to use *MLX,* the machine language entry program, to type it in. See "Typing Aids" elsewhere in this section. When *MLX* prompts you, respond with the values given below.

**Starting address: 0801**
**Ending address: 2058**

When you've finished typing *Crown Quest,* be sure to save a copy of the program before exiting *MLX.*

Although *Crown Quest* is written in machine language, it loads and runs like a BASIC program. When you're ready to play, plug a joystick into port 2. Load the program and type RUN. *Crown Quest* requires disk access, so don't remove the disk from the drive until you've finished playing.

## Playing the Game

In *Crown Quest*, you're a knight of the white castle. Your mission is to find and return the king's crown as quickly as you can. When you run *Crown Quest,* the program will search for a file on the disk named CQ.TIMES. If the file isn't there, it will be written automatically. This file is a record of the best playing times of people who have won the game. Once this file has loaded, the title and the best times are displayed.

Use the joystick to select one of four versions of the game. Each version uses the same *Crown Quest* kingdom, but the objects are located in different places. Game 1 is easiest; game 4, the most difficult.

Play begins with your knight standing in front of the white castle, where you must return the crown to win the game. Control the knight with the joystick and begin exploring. The kingdom is connected by a series of rooms with mazes between them. Some of the mazes may be simple, but they can be up to 12 screens large and have many rooms connected to them.

Somewhere in the kingdom is a toll bridge. Once you've crossed it, you enter the realm of the black knight, which consists of two challenging mazes, one room, and the black castle.

There are nine different objects to collect and use as you play *Crown Quest*. These objects appear in the lower left corner of the screen. You press the fire button to pick up an object, but you may carry only one item at a time. You may not drop objects when you're inside a maze. The object you're currently carrying is displayed in the text window at the bottom of the screen. Should you attempt to pick up an object while you're already carrying one, the two will be swapped.

You may find piles of gold worth either 5 or 10 points. Your gold points are displayed at the bottom of the screen. You'll need 50 gold points before you can pay to cross the black knight's toll bridge.

Other objects you may find are castle keys, a sword, a magnet, and the crown. You cannot enter a castle until the gate is open. If the gate is closed, you'll need to find a key that's the same color as the castle. The one exception is the white castle. Since it is already open, you won't need a key to enter it.

When exploring mazes, you may come across dragons flying toward you above the maze. If the dragon hits you, you'll see a flash of bright light. You can sustain only two or three hits in one maze before you're struck down, penalized two minutes, and sent back to the white castle. If you find the sword, you can defend yourself against the dragon.

## The Black Knight's Lair

When you cross the toll bridge, 50 gold points will be taken, and you'll enter a corridor that leads to the black knight's kingdom. Once inside the black castle, you'll come face to face with the black knight himself. He stands twice as tall as you, guarding the entrance to a deep, dark, invisible maze—his hiding place for the crown. If you attempt to pass him without a sword, you'll be struck by his mighty fist and sent back to the white castle. Your only hope is to carry your sword, get a long running start, and try to strike him down.

Once past the black knight, you enter the most challenging maze of all. You're surrounded in darkness, but suddenly lightning illuminates the path for an instant. You must find your way through the maze using only the lightning as your guide. When you finally reach the crown, you'll see that the black knight has hidden it inside the maze wall. One of the other ob-

jects in the game can help you take possession of the crown. I won't tell you exactly how to get it out of the wall, but you'll need one of the objects mentioned earlier.

### Winning the Game

When you have the crown, take it back to the white castle. The king will congratulate you, and your winning time will be displayed. Press the fire button, and the best-times screen will appear. If your time is better than the current best time for the game you played, you may type in your name. Press Return, and the best-times file will be updated on your disk. If your time did not make the list, the title screen will appear. Press the button to play again.

The first few times you play *Crown Quest*, it may take you more than 20 minutes to get through game 1. Once you've become familiar with a certain game, it becomes much easier to get a decent time. Game 4 should take you about an hour to solve.

To pause the game, press f1. The screen's border will flash different colors to let you know play is suspended. To continue the game, press f1 again. To restart the game completely, press f3.

Without question, the most difficult task in *Crown Quest* is trying to find your way through a maze with a dragon on your tail. The best way to solve this problem is to find the sword first and then to kill the dragon. However, in the more difficult games, you might have to pass through two or three mazes before you locate the sword. When a dragon is in your path, avoid it by backing into the previous maze for a second and then return. This will confuse the dragon and give you more time to escape. Remember that you can survive a couple of dragon hits.

Another challenging aspect of *Crown Quest* is that you can carry only one object at a time. You may find yourself retracing your steps many times during a game. When you cross the toll bridge, you must go back for necessary objects to recover the crown. The best strategy is to remember where you left certain items so you can recover them quickly.

Keep in mind that there are many hidden rooms branching off from the mazes that could contain valuable objects. You may have to explore every passageway in the kingdom before you locate them all. It's not easy to be victorious in your quest for the crown, but when you are, you'll agree it was well worth the adventure.

### Crown Quest

```
0801:0B 08 70 17 9E 32 34 30 6E
0809:37 00 00 00 20 20 20 20 96
0811:20 20 20 20 20 A0 C4 B9 06
0819:3C 08 99 F8 00 B9 FD 08 F6
0821:99 33 03 88 D0 F1 A0 09 4C
0829:B9 0C 08 99 FF 03 88 D0 A1
0831:F7 A9 00 85 2D A9 30 85 F5
0839:2E 4C 00 01 19 B4 03 00 25
0841:30 D1 1E B9 6E 09 99 E8 F0
0849:07 C8 D0 F7 EE 02 01 EE 19
0851:05 01 C6 F9 D0 ED A2 03 23
0859:20 34 03 F0 33 C9 07 D0 95
0861:16 A2 01 20 34 03 D0 0A A0
0869:A2 04 20 34 03 18 69 07 65
0871:10 05 A2 0A 20 34 03 85 1D
0879:A8 A5 A7 85 A9 A5 FE 85 FB
0881:F7 A5 FF 85 F8 20 6C 03 73
0889:A5 F8 85 FF A5 F7 85 FE 72
0891:E8 20 34 03 D0 1E A2 08 21
0899:20 34 03 A0 02 84 A8 85 2A
08A1:A6 18 A5 FC 65 A6 85 F7 58
08A9:A5 FD 65 A7 85 F8 20 6C EF
08B1:03 4C 13 01 E8 20 34 03 FB
08B9:D0 1C A0 03 84 A8 E8 20 36
08C1:34 03 F0 08 A2 08 20 34 F4
08C9:03 4C 5C 01 A2 0B 20 34 BF
08D1:03 E6 A7 4C 5C 01 E8 20 AF
08D9:34 03 D0 0A E8 20 34 03 B2
08E1:18 69 04 A8 D0 D6 E8 20 37
08E9:34 03 D0 0A A2 02 20 34 21
08F1:03 18 69 06 D0 ED A2 08 A2
08F9:20 34 03 D0 E6 A9 00 85 F7
0901:A7 A4 FB F0 0C 06 FA 2A 37
0909:26 A7 C6 FB CA D0 F2 A8 D8
0911:60 48 B1 FE 85 FA A9 08 FE
0919:85 FB 68 A4 FE D0 02 C6 4A
0921:FF C6 FE C0 E7 D0 DE A4 B5
0929:FF C0 07 D0 D8 A9 37 85 BA
0931:01 58 4C 28 08 A4 A8 F0 FA
0939:22 A5 F7 38 E5 A8 B0 03 7E
0941:C6 F8 38 85 F7 A5 FC E5 8A
0949:A8 B0 02 C6 FD 85 FC B1 3A
0951:F7 88 91 FC 98 D0 F8 C4 42
0959:A9 F0 0A B1 F7 C6 FD C6 76
0961:F8 C6 A9 10 EC 60 78 E6 98
0969:01 4C 16 08 60 00 0B 08 73
0971:0A 00 9E 32 30 38 38 00 52
0979:26 08 14 00 8F 20 43 52 F8
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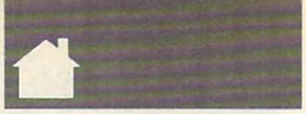

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1709:57 59 B4 20 9E 44 74 62 23
1711:36 29 B1 02 C7 3C 05 A2 D6
1719:0D A0 08 F2 BA 82 60 06 CC
1721:21 D0 AD 57 50 B0 82 30 B9
1729:61 85 EB 3C 92 29 1E 0C 2C
1731:A2 F0 29 F1 49 66 30 C4 3A
1739:62 F0 16 27 99 C1 00 78 56
1741:92 39 12 81 43 4C 99 87 67
1749:2A 49 57 C9 06 18 D7 C1 68
1751:F0 A8 83 EB 78 78 00 43 3A
1759:0D 00 08 8B 63 A2 0E 70 F9
1761:1D 82 54 8D E0 C6 1F 07 89
1769:70 FE 80 E2 E1 14 20 7A E7
1771:0C 81 C1 10 64 F0 26 9F 12
1779:21 30 18 E2 44 C9 03 F1 B6
1781:07 A2 3D C4 17 54 F0 09 C4
1789:B8 3F 60 D8 4C 3A 59 4C C7
1791:F4 58 30 9A E4 03 69 05 0B
1799:11 2B 0A 9D 96 0E 0F 30 71
17A1:9B E1 C4 44 E4 A4 86 0E C7
17A9:A4 68 58 84 0E 2B F8 83 2A
17B1:87 87 22 18 0F 4C C9 59 E1
17B9:A2 72 92 D3 04 85 58 B8 05
17C1:8C 02 72 2C 82 0E 83 20 3B
17C9:0A 8F 2A 09 E0 90 01 8D 8F
17D1:51 01 20 08 1A 07 41 1C F8
17D9:11 3E 08 92 03 00 13 3A C2
17E1:D5 B5 F2 04 0A 82 06 A2 10
17E9:03 0F 3B 08 9E 71 02 A2 A6
17F1:0A A0 07 E0 DE 80 A0 0D 83
17F9:46 41 41 03 28 86 06 16 71
1801:1E E7 C0 0B 4C 4B E3 87 E1
1809:73 4C A6 5A E0 A9 5C E7 CE
1811:59 78 2D 07 E6 2C CE E1 89
1819:1A A9 05 0A 71 C3 43 3E 61
1821:14 4C 79 57 7E 82 E3 0D E5
1829:EF 04 3D F5 40 F1 15 31 7E
1831:1E 6C 9C 0B 22 F8 D8 2F A5
1839:39 CE 90 88 E3 E7 38 8E 12
1841:A4 E2 B8 60 00 DA D3 9C 49
1849:E3 38 6C 4C BA 48 2E 5A 79
1851:4C 35 00 ED 01 77 D8 00 6B
1859:9A 96 12 9C 96 0E 8F 38 CC
1861:68 1B 91 96 0D 8F 81 C0 92
1869:00 63 19 13 8F 65 87 87 6F
1871:66 49 8E 26 EC D3 CB C2 6C
1879:4C AF 5A 9E 63 11 A0 47 D8
1881:77 14 0C 1C 06 30 38 80 97
1889:83 18 04 4F AD F2 15 ED 48
1891:4F 8D 27 70 B4 56 F0 F1 8B
1899:04 C5 C2 17 27 28 74 48 12
18A1:C4 11 F0 1C A7 02 0C A5 5B
18A9:42 05 04 03 34 00 D1 47 79
18B1:1F 46 80 71 4C 80 5B 4C 91
18B9:F1 56 C3 31 0E A2 01 79 7A
18C1:F6 24 D8 40 8C 42 4B 86 20
18C9:C7 56 13 33 5D 60 E0 5B 92
18D1:A9 30 A2 D1 A0 46 0A 07 8D
18D9:CB 6C C9 C8 A9 0D 8A CF 37
18E1:0F 89 8F 23 74 4C CC 5B E9
18E9:BE EB 20 62 4E 4E 97 44 BD
18F1:A9 5B 36 9D DD A9 09 C5 DB
18F9:05 02 CA D9 C4 D9 20 81 73
1901:65 9B 40 04 39 80 07 64 53
1909:AE 4C 09 2D A2 36 AE 64 49
1911:C0 58 C7 2F 59 C5 9B 6E 2D
1919:73 AD D0 24 C9 B5 B0 01 54
1921:E0 B0 8D E4 C7 8D E5 09 39
1929:9B 83 24 1C A2 04 20 D7 8D
1931:52 AD 24 00 87 2C FC 5F C2
1939:5C AA A1 C9 31 02 CA C5 02
1941:8D CB C5 60 2C 84 D9 48 5B
1949:6E EC F9 C7 57 11 C0 50 7A
1951:82 08 C0 21 B7 F9 A3 01 DE
1959:19 79 34 1B C0 FC 1D 34 17
1961:26 C0 84 E9 C9 B4 F0 1E 27
1969:C5 07 60 14 14 0F 20 0A B4
1971:0A 0B 10 51 85 05 88 25 F8
1979:4C B0 5C 4C 18 2D 02 A4 6C
1981:20 6C AC 60 10 61 9A C3 79
1989:00 04 03 4C 12 5D A9 01 3C
1991:8D 21 F0 02 20 90 54 AD AA
1999:1B D5 01 03 03 20 8D 4B 1E
19A1:AD 01 D0 C9 92 90 13 E4 83
19A9:5D F2 A9 40 F1 7D 48 35 CB
19B1:80 4C A5 5C 20 BA ED 95 0F
19B9:54 11 25 8E 02 A0 02 20 9E
19C1:B3 4A A9 15 20 AD E3 48 AE
19C9:A8 50 AD 29 08 00 D0 2A B8
19D1:6A 1E 2B 60 16 80 FC 73 4C
19D9:1F 2F 3D 8D 1D 95 4E 18 DB
19E1:69 96 4E A9 90 8D 09 26 C5
19E9:41 8D 08 81 35 C3 17 D0 F0
19F1:0A 01 41 D2 F6 3C 55 1F 31
19F9:A2 B4 A0 9A 20 D4 05 17 DD
1A01:DB 90 8E 4C F0 5C 3C 4D 9C
1A09:11 B9 AD 52 00 7E 10 8D B6
1A11:10 D0 60 A9 20 A2 44 A0 DC
1A19:49 20 CA 54 20 9C D2 61 13
1A21:BF 4B C8 60 2E 4C CD 81 E6
1A29:5C 41 4B 44 56 20 66 55 DE
1A31:20 BE 54 81 70 50 F0 F3 62
1A39:02 0C 6F C0 0E C9 03 F0 F9
1A41:4B 48 04 F0 19 20 E4 2D FC
1A49:C8 20 F7 54 63 AD 1D A8 E2
1A51:30 44 F0 0F 20 0A B4 20 70
1A59:20 1C 55 4C B7 57 C5 5D 18
1A61:4C 39 5D AD 2D 70 C9 09 58
1A69:F0 03 4C 81 56 00 3A 43 E2
1A71:AE 53 20 17 17 7D 1C C0 EE
1A79:B9 E0 64 38 E9 80 D8 C5 9B
1A81:81 E8 7F A9 06 99 C3 D9 33
1A89:F1 0D D0 EA 82 91 40 5A F7
1A91:C0 C7 C8 C0 28 9B A9 8E CE
1A99:8D 04 86 04 68 8D 05 46 70
1AA1:07 8D 29 60 09 0C 8D FA 76
1AA9:C7 A9 05 CC 91 A0 63 02 71
1AB1:04 C8 8D 01 26 02 8D F8 29
1AB9:C7 81 82 A1 F7 C7 A3 15 D7
1AC1:D0 A9 B3 07 85 97 8F 3D 96
1AC9:30 C4 81 4C 41 62 8D C9 B4
1AD1:01 0A 11 D0 20 E0 4B 20 73
1AD9:A5 4B 0D DF 05 6C 49 85 45
1AE1:01 1B FE D0 F8 AD FF 7F 48
1AE9:C9 00 F0 18 C9 01 F0 24 FA
1AF1:C9 02 F0 30 7B FD A1 6C 30
1AF9:79 F8 F0 2A 79 F8 F0 40 BB
1B01:79 C8 F0 B8 04 56 54 99 8B
1B09:00 70 C8 C0 16 D0 F5 4C AC
1B11:87 53 CD 15 F6 FE B2 0A 0E
1B19:80 72 06 32 02 20 FF 00 A0
1B21:80 20 4C 52 63 C6 39 5C 53
1B29:52 40 78 D5 43 51 2E 9A 5B
1B31:DE 2C 50 2C 57 66 08 E5 F8
1B39:20 29 A6 3A 96 43 9E 52 93
1B41:99 4F 9F 57 9A BC 38 51 0B
1B49:9F 55 99 45 9E 53 96 54 EF
1B51:29 71 D9 0D 90 05 43 BA 5E
1B59:00 41 54 45 44 D1 0F 0A 50
1B61:44 41 4E 4E 59 20 45 80 0F
```

```
1B69:C3 4C 49 53 48 E2 42 1D 62
1B71:54 19 19 1D 9F 3E 6B E0 BA
1B79:05 63 49 92 53 11 41 93 52
1B81:21 1E 2C 9A CD 63 1C 22 55
1B89:9B 72 50 C7 40 46 2E 2E 56
1B91:20 1E 00 0A 14 02 3A 30 4D
1B99:30 06 B3 1C 13 13 50 52 79
1BA1:45 53 53 EF 55 54 05 45 04
1BA9:80 4F 4E 00 D1 DC 20 32 32
1BB1:05 4F 20 42 45 47 AE 1F 2A
1BB9:90 13 24 50 90 11 9F 10 9E
1BC1:C9 53 45 4C 45 43 54 DC DB
1BC9:26 55 53 49 4E 47 20 4A 81
1BD1:4F 59 53 54 49 43 4B 11 B4
1BD9:11 05 0D F1 F5 83 3A 06 D2
1BE1:32 02 20 20 47 41 4D 45 D6
1BE9:20 31 0D A9 08 90 57 00 E9
1BF1:8D 20 E4 09 21 88 00 04 53
1BF9:42 06 8D 32 A8 34 58 CC 3B
1C01:A9 04 8D 88 02 A9 3F 8D 0C
1C09:02 E2 04 C7 8D 00 56 15 26
1C11:2E 55 D0 E2 38 D0 38 C4 38
1C19:7C 73 37 B5 8F 48 2B 3C DE
1C21:77 19 E7 3E 77 0F 06 59 99
1C29:77 37 06 55 51 E0 5F 55 23
1C31:B4 30 53 AD 24 0E 30 19 E7
1C39:15 46 3D B8 38 11 20 8D 94
1C41:33 C6 C1 8D 18 03 A9 EF E5
1C49:8D 28 03 20 E1 8E BC 17 8E
1C51:86 A0 21 06 20 9F 61 AE 6A
1C59:AD F4 9E B6 0D 87 10 C6 52
1C61:21 2D 1E 07 A2 00 E2 3D C1
1C69:60 AC AC 0A 4E 17 E1 84 4A
1C71:47 E8 E0 D2 EE 15 15 8D 54
1C79:A5 22 33 8D CD 30 02 34 B3
1C81:8D F5 DB 0B 8D 76 30 02 D2
1C89:0C 8D 9E 23 0F 8D C6 D9 47
1C91:A9 82 60 86 A9 3E AC 8E E1
1C99:06 5C A9 32 AA 99 60 30 F0
1CA1:0F C9 0E F0 18 B4 05 2C 6E
1CA9:AD 00 DC 29 10 C9 00 D0 5F
1CB1:DD A9 93 20 D2 FF 21 BA 4B
1CB9:76 4C 84 53 C0 00 F0 CE BC
1CC1:C1 2F EA 38 E9 BA C8 CE 22
1CC9:B9 D8 C0 78 F0 B6 A9 20 8A
1CD1:99 76 05 AD E3 05 60 28 0C
1CD9:8D 31 5F 8A A7 4C 41 61 0C
1CE1:A9 46 6D 4E AE 73 00 39 8F
1CE9:5F D8 99 5E D8 6D 0C 8E 44
1CF1:E4 8E 68 D8 18 D1 16 3C 4B
1CF9:44 0C 0D 51 86 20 D5 17 85
1D01:B7 FF C9 04 D0 08 A9 FF 8A
1D09:82 F0 51 4C FD 61 70 0D 13
1D11:05 99 84 28 40 43 1C 5D EB
1D19:B9 B8 05 99 00 7E C8 C0 E4
1D21:9F D0 F5 60 CA 99 40 9C FD
1D29:A2 22 A0 5F A9 0F 20 BD CE
1D31:08 47 00 A2 08 A0 01 20 50
1D39:BA 00 0E 7E 85 FB A9 00 E9
1D41:85 FA A2 9F A0 7E A9 FA 98
1D49:20 D8 FF A9 1B 8D 11 D0 66
1D51:C1 1D BF F8 28 D0 FA 60 16
1D59:AA CA E0 FF F0 06 18 69 F0
1D61:0A 4C 35 62 60 EE EB BA D1
1D69:AD 32 5F 8D 00 3A 54 60 BD
1D71:A0 00 AD B4 06 C9 01 F0 47
1D79:09 CE 8A 2B 62 4C 4F 62 35
1D81:DF 6A 80 08 2A 0C 26 B9 5E
1D89:D4 3A 83 1F B9 D6 3C 83 44
1D91:18 B9 D7 3C 83 11 B9 D9 B2
1D99:3C 83 0A B9 DA 05 C9 30 5E
1DA1:D0 0C 4E 24 63 49 12 70 28
1DA9:59 48 64 6C C0 44 F2 8E 81
1DB1:61 11 B9 28 87 50 30 9D 16
1DB9:4C 15 C8 E8 14 F1 AD 10 DA
1DC1:D8 31 C4 11 53 B2 20 83 87
1DC9:11 21 4F C9 86 4D B0 48 6E
1DD1:AD 13 2F 43 14 3C 25 23 C0
1DD9:3B 18 24 F1 94 54 78 B0 F2
1DE1:90 27 B0 22 AD 16 33 43 D5
1DE9:17 3C 0C F0 AD 26 7F 20 74
1DF1:34 62 18 6D 27 7F 8D 80 8B
1DF9:BC AD 36 5F CD 37 5F 90 55
1E01:03 40 38 66 01 B1 BD 05 8B
1E09:7F 99 D3 05 4D 08 D0 F4 57
1E11:A2 00 D1 5E 14 6A 60 A9 73
1E19:07 53 C5 D9 E8 C8 E0 A0 D0
1E21:F0 8F 14 8D 8A 0A 80 14 A6
1E29:36 20 F0 13 F5 D9 53 34 C9
1E31:2E 36 C9 41 90 E9 C9 5A 79
1E39:B0 E5 38 E9 40 2D 57 29 7B
1E41:6E C8 EE 2A 05 98 A9 64 A9
1E49:20 AB 49 69 37 10 D0 C9 A5
1E51:20 E4 FF B2 29 F9 C9 14 DA
1E59:F0 07 C9 0D F0 1C 4C 89 F3
1E61:63 AC 6A 2E AD 21 09 C9 78
1E69:00 F0 AD A9 2E 88 CE 35 98
1E71:5F 99 C2 05 8C 34 5F 4C AC
1E79:52 63 20 EF 61 20 FD 61 A3
1E81:4C E7 60 FF 3A 78 08 5F 0D
1E89:85 FB 69 1B 85 25 A9 03 7D
1E91:85 FC 69 64 85 26 18 A9 E1
1E99:00 65 FB 85 27 A9 C0 65 CD
1EA1:FC 85 28 A2 FF A0 00 8C FB
1EA9:01 08 8C 02 08 F0 04 B1 D7
1EB1:25 91 27 C6 25 E4 25 30 6D
1EB9:FC 41 26 C6 27 E4 27 D0 E1
1EC1:02 C6 28 C6 FB E4 FB D0 5E
1EC9:E6 C6 FC E4 FC D0 E0 A5 AB
1ED1:28 C9 A0 B0 0A 85 34 85 08
1ED9:38 A5 27 85 33 85 37 4C 43
1EE1:10 5F 51 F8 9F 28 14 28 A5
1EE9:2A 54 A8 2A 14 A8 AA 96 37
1EF1:AA 89 96 62 0A 75 A0 02 48
1EF9:7D 80 B8 7B 51 7D 04 96 03
1F01:10 74 55 D0 90 00 F0 14 96
1F09:1B 51 3B 05 41 40 01 41 2F
1F11:F8 73 47 00 64 0B 09 54 47
1F19:88 40 21 14 20 14 96 00 8F
1F21:02 96 80 2A 55 A8 A9 75 CE
1F29:6A 2A 7D A8 08 7D 20 00 D7
1F31:7D D8 23 5D C0 48 40 00 46
1F39:15 70 00 51 10 00 41 04 3A
1F41:01 45 40 39 6E 85 E8 CF 18
1F49:DF 8A C7 46 C1 73 87 40 A2
1F51:7E 23 BD 20 2A 66 3B 02 B4
1F59:E7 F2 37 E4 21 F4 E1 61 7F
1F61:2C D3 20 6C 08 14 27 45 99
1F69:2C 88 BF 22 30 1F 9E 0E 43
1F71:3A 9F 96 78 1D 01 CE 11 AA
1F79:44 90 9F 1E 0F A1 12 0F 06
1F81:9B 34 06 61 43 A0 38 1C 9A
1F89:69 7E 86 3C 10 0C 9A 82 19
1F91:8D 91 42 A0 28 5C 68 04 D4
1F99:3C 44 1E 40 04 73 44 22 67
1FA1:40 1C 3A 18 7C 70 86 3C BE
1FA9:28 00 C4 00 41 10 00 44 23
1FB1:A0 C7 F1 C6 50 1E BA 20 6D
1FB9:0E 7C 00 06 21 AE B3 E5 8F
1FC1:B1 90 51 FF FF FF 82 50 7C
1FC9:B6 14 46 4F 1E 1F 71 14 8A
1FD1:04 84 54 05 1B 02 87 80 7E
1FD9:07 CF 80 AD 40 01 53 A8 CF
1FE1:14 41 49 1E 3F 17 71 C0 7F
1FE9:06 6E 9E 3F 6E F2 6E FC A7
1FF1:FE 31 83 3F FF F2 13 E4 37
1FF9:21 32 38 8F 06 5C 03 FF FC
2001:00 07 83 28 BF E0 1F 87 3D
2009:F0 3F FB FC FF BB FF 3F 0F
2011:C7 F0 03 FC 92 F4 86 0E 25
2019:0F 83 39 06 32 02 A0 04 28
2021:0A 1C EE 70 3A 81 08 44 7E
2029:20 0C 44 60 0E EE 86 0B 4F
2031:E0 0F FF E0 94 05 71 08 57
2039:07 FF C0 00 94 07 FE FE D2
2041:FE 00 EF EF EF 00 EE EE 4A
2049:EE 9B 7C 20 F7 00 7F 00 38
2051:53 A0 18 18 18 3C 18 00 C9
```

# ONLY ON DISK

There's something new on the *Gazette Disk*. In addition to the type-in programs found in each issue of the magazine, we're putting more features and programs every month on the *Gazette Disk*. Check out the original 64 and 128 artwork on display in "Gazette Gallery," and look for our bonus programs as well. These programs and their instructions appear only on disk. Here are descriptions of this month's bonus programs.

## *AFK*

Ben Campbell

*AFK* (Attack, Fire, Kill) is a two-player shoot-'em-up written in machine language. Players guide their attack helicopters from a split-screen perspective through a maze of caverns in this aerial game of hide-and-seek.

## *Sprite Grabber*

Hubert Cross

*Sprite Grabber* allows you to grab sprites and save them to disk as BASIC data statements, assembly language .BYT statements, or an ML file.

## *Sprite Album*

Hubert Cross

*Sprite Album* is a database for storing sprites you've collected. Besides storing, you can edit and animate the sprites, too.

# PROGRAMS

GARY DUGGERT

# STOCK MARKET 128

BECOME A MILLIONAIRE IN THIS FASCINATING ONE- OR TWO-PLAYER STOCK MARKET SIMULATION FOR THE 128

The secret to making money on the stock market is simple: Buy low and sell high. The trick is picking a stock whose value is going to increase after you've bought it. Here's your chance to become a Wall Street tycoon in this exciting game for the 128 in 80-column mode.

*Stock Market 128* is fast paced and operates entirely from the keyboard or keypad. It requires no skill or knowledge of the actual stock market and will provide you with unlimited hours of family entertainment.

## Getting Started

*Stock Market 128* is written entirely in BASIC. To avoid typing errors, enter the program using *The Automatic Proofreader*. See "Typing Aids" elsewhere in this section. When you've finished typing, be sure to save a copy of the program to disk.

Each player starts the game with $5,000, and the object is to become a millionaire before your opponent does. Use this bankroll to buy stock from any or all of six stock options that are presented at the start of the game.

Once the main screen appears, the game, just like the actual stock market, is active. Stock values are moving up and down. When you're ready to make your purchases, press either Return or the space bar. You're presented with the option to select player 1 or 2. From there you have the option to buy stock, sell stock, or return to the game.

Since you have no stock at the start of the game, select the buy option. You're then asked which stock you wish to purchase. Choose by selecting the number next to the stock's name. You're then asked how much stock you want to buy. The program tells you how many shares you can purchase depending on the amount of cash you have on hand. You may decide on a diverse portfolio by spreading your money over a number of stocks, or you may invest heavily in just a few.

Because of the instability of the market, stocks can take devastating crashes or make incredible gains in a matter of seconds. You can buy or sell stock at any time by pressing Return or the space bar.

Dividends and bonuses are paid to those who have the foresight to buy into stocks whose worth rises to more than $100 per share, but there's also a risk that the stock will crash and most of the investment will be lost.

If a stock goes broke, all investors lose the monies in that stock, and a new commodity will take its position on the board at a value of $50 per share. Taxes are assessed every 200 updates, which is equivalent to one year's time. Uncle Sam wants 25 percent of the profits (including dividends/bonuses) each year. Game speed can be varied using the + or − keys, and it can be paused by pressing the P key.

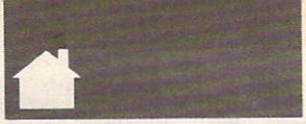
If a player's total net worth declines for three consecutive years, then that player's seat on the stock market is sold. At that point, the game is over, and the opponent is victorious.

## Stock Market 128

```
CG 10 REM COPYRIGHT 1990, COMP
      UTE PUBLICATIONS INT'L L
      TD. ALL RIGHTS RESERVED.
CS 20 FAST:WINDOW 0,0,79,24:CO
      LOR6,1:SCNCLR:PRINTCHR$(
      142)
CX 30 PRINTTAB(26)"{3}{D}
      {26 I}{F}"
MH 40 PRINTTAB(26)"{RVS}{K}
      {CYN}{26 SPACES}{3}{OFF}
      {K}
MS 50 PRINTTAB(26)"{RVS}{K}
      {CYN}{2 SPACES}$$ STOCK
      {SPACE}MARKET 128 $$
      {2 SPACES}{3}{OFF}{K}"
QE 60 PRINTTAB(26)"{RVS}{K}
      {CYN}{26 SPACES}{3}{OFF}
      {K}
BS 70 PRINTTAB(26)"{3}{C}{RVS}
      {26 I}{OFF}{V}"
FX 80 A$="COPYRIGHT
      {SHIFT-SPACE}1990 COMPUT
      E PUBLICATIONS INT'L LTD
      ":PRINT"{WHT}{DOWN}":GOS
      UB1160
EC 90 A$="ALL RIGHTS RESERVED"
      :PRINT"{DOWN}{YEL}":GOSU
      B1160
JJ 100 WINDOW 5,13,74,24:SCNCL
       R:PRINT"{CLR}{HOME}";:Y
       =INT(RND(0)*6)+1:Z=1:P=
       0
HB 110 PRINT"{7}{RVS}
       {70 SPACES}"
KM 120 FORX=0TO6:PRINT"{RVS}
       {OFF}{8}++++++++++++++
       ++++++++++++++++++++++
       ++++++++++++++++++++++
       +++++++{7}{RVS} ":NEXT
FX 130 PRINT"{7}{RVS}
       {70 SPACES}{DOWN}"
RS 140 A$="{3}PRESS ANY KEY TO
        START{6}":PRINTTAB(24)
       A$;
MF 150 PRINT"{HOME}":FORX=1TOY
       -1:PRINT:NEXT:PRINTTAB(
       1)
BF 160 GET A$:IFA$=""THEN170:E
       LSE250
RD 170 X=INT(RND(0)*2):IFY<1TH
       ENY=1:ELSEIFY>7THENY=7
ER 180 IFP=0ANDX=0ANDY=7THENA$
       ="N":X=1:GOTO240
XP 190 IFP=0ANDX=0THENA$="
       {DOWN}M":Y=Y+1:GOTO240
```

# PROGRAMS

```
DF 200 IFP=0ANDX=1THENA$="N":G
       OTO240
AE 210 IFP=1ANDX=0THENA$="M":G
       OTO240
HG 220 IF P=1AND X=1ANDY=1THEN
       A$="M":X=0
DD 230 IFP=1ANDX=1THENA$="{UP}
       N":Y=Y-1
GJ 240 PRINTA$;:P=X:Z=Z+1:IFZ=
       69THEN100:ELSEFORQ=0TO1
       10:NEXT:GOTO160
CB 250 FORX=0TO5:READSK$(X):SV
       (X)=50:NEXT:CH(1)=5000:
       CH(2)=5000:OW(1)=5000:O
       W(2)=5000:YR=0:LT$="*":
       UY=6
JM 260 PRINTCHR$(14)"{CLR}
       {HOME}";:DE$=CHR$(27)+"
       Q":COLOR6,1
RQ 270 DATA "SILVER","GOLD","C
       ARS","TRUCKS","TRAINS",
       "PIZZA","SOAP","FURS","
       SOCKS","BEADS","CORN","
       SHEEP","SHIRTS","HOTELS
       ","BUSES","STEEL","OIL"
       ,"COPPER"
GF 280 DATA "NICKEL","BRASS","
       PHONES","PAPER","PANTS"
       ,"MILK"
JS 290 DATA "COFFEE","TIRES","
       RADIOS"
QB 300 WINDOW0,0,79,24:PRINT"
       {CLR}{HOME}"TAB(30)"
       {GRN}CURRENT STOCK VALU
       E{DOWN}"
MG 310 PRINTTAB(15)"{2}0
       {3 SPACES}10{2 SPACES}2
       0{2 SPACES}30{2 SPACES}
       40{2 SPACES}50
       {2 SPACES}60{2 SPACES}7
       0{2 SPACES}80{2 SPACES}
       90{2 SPACES}100 110 120
       "
DE 320 IFRR=0THENFORX=0TO5:COL
       OR5,2+INT(X*1.2):PRINTS
       K$(X)TAB(15)"**********
       **********";TAB(70)"$50
       .00":NEXT:RR=1:GOTO350
EG 330 FORX=0TO5:COLOR5,2+INT(
       X*1.2):PRINTSK$(X)TAB(1
       5);:IFSV(X)=0THENPRINT"
       {G}"TAB(74)SV(X):NEXT:E
       LSEFORY=0TOINT(SV(X)/10
       ):PRINT"****";:NEXT:PRI
       NTTAB(68);
AD 340 PRINTUSING"#$###.##";SV
       (X):NEXT
BG 350 WINDOW 0,10,79,24:SCNCL
       R:PRINTTAB(10)"{6}PLAYE
       R ONE'S ASSETS"TAB(50)"
       {YEL}PLAYER TWO'S ASSET
       S{DOWN}"
KE 360 PRINTTAB(9)"{7}BOUGHT
       {9 SPACES}CURRENT"TAB(4
       9)"BOUGHT{9 SPACES}CURR
       ENT"
RK 370 FORX=0TO5:COLOR5,2+INT(
       X*1.2):PRINTSK$(X);TAB(
       40)SK$(X):NEXT
GX 380 PRINTCHR$(27)+"M";"
       {YEL}";:FORX=0TO5:GOSUB
       540:NEXT
MH 390 WINDOW0,9,79,9:FORZA=0T
       O79:PRINT"*";:NEXT
JH 400 WINDOW0,0,20,0:PRINT"
       {WHT}GAME SPEED =";TS+1
       ;:WINDOW60,0,79,0:PRINT
       "{CLR}{HOME}TAX DUE IN
       {SPACE}-";200-YR:IF RT=
       1 THEN RETURN
JH 410 SLEEP TS:GETA$:IFA$THEN
       420:ELSEGOSUB1530:GOSUB
       1250:GOSUB920:IFYR=0THE
       N300:ELSE GOTO400
QJ 420 IFA$="P"THEN COLOR6,13:
       GETKEYA$:COLOR6,1:GOTO4
       00
KK 430 IFA$="+"THEN TS=TS-1:EL
       SEIFA$="-"THENTS=TS+1
SF 440 IFTS>4THENTS=4:ELSEIFTS
       <0THENTS=0
RD 450 IFA$<>CHR$(13)ANDA$<>CH
       R$(32)THEN 400
DG 460 WINDOW 0,10,79,24:PRINT
       "{CLR}{HOME}{YEL}";:A$=
       "PLAYER 1 OR 2?":GOSUB1
       160
PM 470 FAST:GETA$:IFA$=CHR$(13
       )THEN350:ELSEIFA$=""ORA
       $<"1"ORA$>"2"THEN470
KA 480 P=VAL(A$)
HR 490 WINDOW 0,10,79,24:PRINT
       "{CLR}{HOME}{RVS}{WHT}1
       . {OFF}{2}BUY":PRINT"
       {RVS}{WHT}2. {OFF}{2}SE
       LL":PRINT"{RVS}{WHT}RET
       URN{OFF}{2} FOR GAME"
PS 500 GETA$:IFA$=""THEN500:EL
       SEIFA$=CHR$(13)THEN350
XP 510 A=VAL(A$):IF A<1 OR A>2
        THEN 500:ELSE ON A GOT
       O 630,790
HC 520 LL$="":COLOR5,2+INT(X*1
       .2):WINDOW 15,3+X,79,3+
       X:PRINTDE$:FORY=0TO(SV(
       X)/2.5):LL$=LL$+LT$:NEX
       T:PRINTLL$;
DK 530 PRINTTAB(54);:PRINTUSIN
       G"#$##.##";SV(X):IFRR=>
       2THENRETURN
GE 540 COLOR5,10:WINDOW 10,13+
       X,38,13+X:TV(X,1)=BG(X,
       1)*SV(X):PRINTDE$;:PRIN
       TUSING"####";BG(X,1);:P
       RINTUSING"#$##,###,###.
       ##";TV(X,1)
PA 550 TW(1)=0:FORN=0TO5:TW(1)
       =TW(1)+TV(N,1):NEXT:WIN
       DOW 0,20,38,20:PRINT"
       {7}STOCK VALUE {WHT}";:
       PRINTUSING"#$##,###,###
       .##";TW(1)
ED 560 WINDOW 0,21,38,21:PRINT
       "{GRN}CASH ON HAND{WHT}
       ";:PRINTUSING"#$##,###,
       ###.##";CH(1)
CD 570 FT(1)=TW(1)+CH(1):WINDO
       W 0,22,38,22:PRINT"
       {PUR}TOTAL WORTH {WHT}"
       ;:PRINTUSING"#$##,###,#
       ##.##";FT(1)
JF 580 TV(X,2)=BG(X,2)*SV(X):W
       INDOW 50,13+X,78,13+X:P
       RINT"{2}"DE$;:PRINTUSIN
       G"####";BG(X,2);:PRINTU
       SING"#$##,###,###.##";T
       V(X,2)
EE 590 TW(2)=0:FORN=0TO5:TW(2)
       =TW(2)+TV(N,2):NEXT:WIN
       DOW 40,20,78,20:PRINT"
       {7}STOCK VALUE {WHT}";:
       PRINTUSING"#$##,###,###
       .##";TW(2)
QF 600 WINDOW 40,21,78,21:PRIN
       T"{GRN}CASH ON HAND
       {WHT}";:PRINTUSING"#$##
       ,###,###.##";CH(2)
MB 610 FT(2)=TW(2)+CH(2):WINDO
       W 40,22,78,22:PRINT"
       {PUR}TOTAL WORTH {WHT}"
       ;:PRINTUSING"#$##,###,#
       ##.##";FT(2)
XR 620 RETURN
PG 630 WINDOW0,10,79,24:SCNCLR
       :A$="BUY OPTIONS":COLOR
       5,11:S=(80-LEN(A$))/2:P
       RINTTAB(S)A$"{DOWN}"
QF 640 PRINT"{PUR}STOCK"TAB(15
       )"CURRENT VALUE"TAB(30)
       "AMOUNT OWNED"
XQ 650 FORX=0TO5:PRINT"{WHT}"X
       +1"{LEFT}. ";:COLOR5,2+
       INT(X*1.2):PRINTSK$(X)T
       AB(15);:PRINTUSING"#$##
       .##";SV(X);:PRINTTAB(30
       )BG(X,P):NEXT
XJ 660 WINDOW45,12,79,18:PRINT
       "{2}PLAYER "P" CASH ON
       {SPACE}HAND{2 DOWN}
       {YEL}":PRINTUSING"#$##,
       ###,###.##";CH(P):IFCH(
       P)=<0 THEN GOTO780
PM 670 WINDOW0,22,79,22:SCNCLR
BA 680 PRINT"{1}WHICH STOCK DO
        YOU WISH TO PURCHASE?"
       ;
PK 690 GETA$:IFA$=CHR$(13)THEN
       WINDOW0,10,79,24:SCNCLR
       :GOTO460
BR 700 IFA$<"1"ORA$>"6"THEN690
       :ELSEX=VAL(A$)-1
CS 710 PRINTA$
HC 720 IFSV(X)=0THENPRINT"
       {CLR}{HOME}{6}NOT
       {SHIFT-SPACE}FOR
       {SHIFT-SPACE}SALE":FORZ
       =0TO5:SOUND1,6000,1:SOU
       ND1,0,2:NEXT:SLEEP2:GOT
       O670
GP 730 WINDOW 40,23,79,23:PRIN
       T"{CLR}{HOME}{YEL}MAXIM
       UM AMOUNT AVAILABLE-";I
       NT(CH(P)/SV(X))
HS 740 WINDOW0,23,39,23:B=0:IN
       PUT"{CLR}{HOME}{PUR}HOW
        MUCH DO YOU WANT";B:IF
       B<0THEN 740
CG 750 PR=B*SV(X):IF PR>CH(P)
       {SPACE}THEN PRINT"{CLR}
       {HOME}{3}NOT ENOUGH MON
       EY FOR THAT MUCH!":SOUN
       D1,5000,30,2,3000,500,1
       :SLEEP2:B=0:PR=0:GOTO74
       0
JS 760 BG(X,P)=BG(X,P)+B:CH(P)
       =CH(P)-PR
GF 770 A$="":GOTO630
CE 780 PRINT"{CLR}{HOME}
       {2 DOWN}{3}INSUFFICENT
       {SPACE}FUNDS":PRINT"SEL
       L SOMETHING FIRST!":SOU
       ND1,6000,30:SLEEP2:GOTO
```



# PROGRAMS

```
      490
BJ 790 WINDOW0,10,79,24:SCNCLR
       :A$="SELL OPTIONS":COLO
       R5,11:S=(80-LEN(A$))/2:
       PRINTTAB(S)A$"{DOWN}"
HP 800 PRINT"{PUR}STOCK"TAB(15
       )"CURRENT VALUE"TAB(30)
       "AMOUNT OWNED"
CF 810 FORX=0TO5:PRINT"{WHT}"X
       +1"{LEFT}. ";:COLOR5,2+
       INT(X*1.2):PRINTSK$(X)T
       AB(15);:PRINTUSING"#$##
       .##";SV(X);:PRINTTAB(30
       )BG(X,P):NEXT
GJ 820 WINDOW45,12,79,18:PRINT
       "{2}PLAYER "P" CASH ON
       {SPACE}HAND{2 DOWN}
       {YEL}":PRINTUSING"#$##,
       ###,###.##";CH(P)
PA 830 WINDOW0,22,79,22:PRINT"
       {GRN}WHICH STOCK DO YOU
        WISH TO SELL?";:GETA$:
       IFA$=CHR$(13)THENWINDOW
        0,10,79,24:SCNCLR:GOTO
       460
RX 840 IFA$<"1"ORA$>"6"THEN830
       :ELSEX=VAL(A$)-1:PRINTA
       $
EJ 850 IF BG(X,P)=0THENPRINT"
       {CLR}{HOME}{3}YOU DON'T
        OWN ANY OF THAT STOCK!
       ":SOUND1,4291,30,2,2145
       ,2146,2,2048:SLEEP 2:GO
       TO830
HA 860 WINDOW0,23,79,23:B=0:IN
       PUT"{CLR}{HOME}{6}HOW M
       ANY";B:IFB<0THEN910
HX 870 IFB>BG(X,P)THENPRINT"
       {CLR}{HOME}{3}YOU DON'T
        OWN THAT MUCH":SOUND1,
       8583,30:SLEEP2:GOTO860
JF 880 PR=B*SV(X)
HE 890 BG(X,P)=BG(X,P)-B:CH(P)
       =CH(P)+PR
XB 900 GOTO790
MF 910 PRINT"{CLR}{HOME}{3}DO
       {SPACE}I LOOK THAT STUP
       ID! TRY AGAIN.":SOUND1,
       3000,30,1:SLEEP2:GOTO86
       0
CX 920 YR=YR+1:IFYR<200THEN RE
       TURN:ELSE YR=0:COLOR5,1
       :COLOR6,16:SOUND 1,3433
       4,90,0,4291,100,2,2048
SD 930 FORP=1TO2:WINDOW0,0,79,
       24:PRINT"{CLR}{HOME}"
RH 940 A$="UNCLE {RVS}{RED} S
       {SPACE}{WHT} A {7} M
       {BLK}{OFF} WANTS HIS SH
       ARE OF THE PROFITS!":GO
       SUB1160:PRINT"{DOWN}"
RJ 950 A$="PLAYER"+STR$(P):GOS
       UB1160:PRINT"{DOWN}"
AR 960 PRINT"YOU ENDED THIS YE
       AR WITH"TAB(54);:PRINTU
       SING"#$##,###,###.##";F
       T(P)
AD 970 PRINT"YOU STARTED THIS
       {SPACE}YEAR WITH"TAB(54
       );:PRINTUSING"#$##,###,
       ###.##";OW(P)
HG 980 YP=FT(P)-OW(P):
KG 990 IFYP=0THENPRINT"
       {3 DOWN}":A$="YOU CAN'T
       LIE TO US!{2 SPACES}TH
       E IRS IS GOING TO INVES
       TIGATE THIS!":GOSUB1160
       :GOTO1130
EM 1000 IF YP<0THENBEGIN:LY(P)
       =LY(P)+1:WS=3-LY(P):IF
       LY(P)=3THEN1170
BH 1010 A$="{RED}WARNING{BLK}"
       :PRINTCHR$(2);:GOSUB11
       60:PRINT"{2 DOWN}"
BQ 1020 A$="{3 SPACES}THROUGH
       {SPACE}COMPLETE INCOMP
       ETENCE, YOU HAVE MANAG
       ED TO COMPLETELY UNDER
       WHELM THE":PRINTA$
FF 1030 A$="NEW YORK STOCK EXC
       HANGE, EMBARRASSING YO
       UR FRIENDS, NEIGHBORS
       {SPACE}AND RELATIVES.
       {2 SPACES}IF":PRINTA$
CS 1040 A$="THIS UNSEEMLY BEHA
       VIOR CONTINUES FOR"+ST
       R$(WS)+" MORE YEARS, Y
       OUR SEAT ON THE STOCK"
       :PRINTA$
RB 1050 A$="EXCHANGE WILL BE G
       IVEN TO ONE WHO IS MOR
       E WORTHY!":PRINTA$:PRI
       NT"{DOWN}":OW(P)=FT(P)
QF 1060 IFDT(P)>0THENBEGIN:TX=
       INT(DT(P)/4):PRINT"YOU
        DID MANAGE TO COLLECT
        $ {LEFT}"+STR$(DT(P))
       +" IN DIVIDENDS.{DOWN}
       "
DJ 1070 PRINT"LET'S SEE... AH
       {SPACE}YES, A MERE 25%
        FOR UNCLE SAM AMOUNTS
        TO";:PRINTUSING"#$##,
       ###,###.##";TX:CH(P)=C
       H(P)-TX
KX 1080 PRINT"THANK YOU FOR YO
       UR GENEROSITY":BEND:BE
       ND
BA 1090 IFYP<=0THEN1130
MP 1100 TX=INT(YP/4):PRINT"YOU
        HAVE EARNED";TAB(54);
       CHR$(2);:PRINTUSING"#$
       ##,###,###.##";YP:
MP 1110 PRINT"UNCLE SAM WANTS
       {SPACE}HIS 25%, SO THA
       T MEANS YOUR TAXES ARE
       ";:PRINTUSING"#$##,###
       ,###.##";TX:CH(P)=CH(P
       )-TX
AS 1120 PRINT"{2 DOWN}HAVE A N
       ICE DAY!":LY(P)=0
XH 1130 WINDOW0,24,79,24:A$="
       {RED}PRESS ANY TO CONT
       INUE.":GOSUB1160:DT(P)
       =0
CF 1140 GETA$:IFA$=""THEN1140
JK 1150 OW(P)=FT(P):DT(P)=0:NE
       XT:COLOR6,1:RETURN
SP 1160 S=(80-LEN(A$))/2:PRINT
       TAB(S)A$;:RETURN
GG 1170 WINDOW0,0,79,24:SCNCLR
       :COLOR6,3:COLOR5,1
ED 1180 A$="{BLK}PLAYER"+STR$(
       P):GOSUB1160:PRINT
KS 1190 PRINT"{2 DOWN}{BLU}GAM
       E IS OVER FOR YOU.
       {2 SPACES}THE OTHER PL
       AYER BEAT THE PANTS OF
       F OF YOU!"
CA 1200 PRINT"TOO BAD..HAHAHA,
        HE HE .. HAHAHA,..
       {2 SPACES}EXCUSE ME, B
       UT IT IS FUNNY."
MA 1210 PRINT"{3 DOWN}WOULD YO
       U LIKE ANOTHER CHANCE?
       "
SD 1220 GETA$:IFA$="Y"ORA$="N"
       THEN1230:ELSE1220
BP 1230 SLEEP2:PRINT"SORRY BUT
        I CHANGED MY MIND, YO
       U CAN'T HAVE ANOTHER C
       HANCE!"
AA 1240 PRINT"{3 DOWN}GOOD-BYE
       ":SLEEP1:COLOR5,1:COLO
       R6,1:END
CK 1250 X=INT(RND(Y)*6):Y=RND(
       X)*10+1:Z=INT(RND(X)*2
       ):IFZ=1THENY=0-Y
KJ 1260 SV(X)=SV(X)+Y
BQ 1270 IFSV(X)=<0THENSV(X)=0:
       ELSEIFSV(X)=>120THENSV
       (X)=120
BH 1280 IFSV(X)=0THENBEGIN
GD 1290 WINDOW 0,10,79,24:SCNC
       LR:COLOR5,2+INT(X*1.2)
       :A$=SK$(X)+" HAS GONE
       {SPACE}BROKE!":GOSUB11
       60:PRINT"{YEL}"
MC 1300 PRINT"{DOWN}A NEW COMP
       ANY HAS REPLACED THIS
       {SPACE}FAILURE.
       {2 SPACES}ALL STOCKS O
       F THIS COMPANY HAVE BE
       EN"
JK 1310 PRINT"REMOVED FROM YOU
       R PORTFOLIO.{2 SPACES}
       YOU WILL NOTICE THAT I
       F YOU OWNED STOCK IN T
       HIS"
BH 1320 PRINT"YOU NO LONGER OW
       N IT.":BG(X,1)=0:BG(X,
       2)=0:READSK$(X):SV(X)=
       50:WINDOW0,3+X,8,3+X:S
       CNCLR
KP 1330 COLOR5,2+INT(X*1.2):PR
       INTSK$(X):RR=2:GOSUB52
       0
GR 1340 SOUND 1,2000,30,0,0,0,
       1,1000
SH 1350 WINDOW0,20,79,20:COLOR
       5,2+INT(X*1.2):A$="PRE
       SS ANY KEY TO CONTINUE
       ":GOSUB1160:IF UY=>26
       {SPACE}THEN RESTORE:UY
       =0:ELSE UY=+UY+1
XC 1360 GETA$:IFA$=""THEN1360
EB 1370 COLOR6,1:RT=1:GOSUB350
       :BEND
JP 1380 IFSV(X)=0THEN1520:ELSE
        PS=INT(RND(Y)*5):IFSV
       (X)<10ANDPS=3THENSV(X)
       =SV(X)+30:RR=2:GOSUB52
       0:RR=1:SOUND 1,10000,1
       00,0,600,100,3,500
QM 1390 PS=INT(RND(Y)*5):IFPS=
       2ANDSV(X)>100THENBEGIN
       :SV(X)=SV(X)/5:RR=2:GO
       SUB520
JX 1400 FORT=1TO16:COLOR6,T:FO
       RTT=0TO20:NEXT:NEXT:CO
       LOR6,1:SOUND1,9000,120
       ,1,0,20,0,2048:SOUND2,
```

```
        7000,120,1,0,20,0,2048
        :SOUND3,6000,120,1,0,2
        0,0,2048:BEND
SA 1410 IF SV(X)>100THENBEGIN
CM 1420 DV=INT(RND(Y)*10)+10:F
        ORP=1TO2:IFBG(X,P)=0TH
        EN1510:ELSEDX(P)=BG(X,
        P)*DV:CH(P)=CH(P)+DX(P
        )
AF 1430 WINDOW0,10,79,24:SCNCL
        R:A$="{7}PLAYER"+STR$(
        P):GOSUB1160:PRINT"
        {WHT}{3 DOWN}"
DX 1440 PRINT"YOU OWN "BG(X,P)
        " PIECES OF "SK$(X)".
        {2 SPACES}THEY ARE WOR
        TH";TAB(60);:PRINTUSIN
        G"#$##,###,###.##";BG(
        X,P)*SV(X)
CA 1450 PRINT"{DOWN}YOUR COMPA
        NY IS PAYING YOU A DIV
        IDEND OF";TAB(60);:PRI
        NTUSING"#$##,###,###.#
        #";DX(P)
DC 1460 IFSV(X)=120THENDB=BG(X
        ,P)*25:CH=CH+DB:DT(P)=
        DT(P)+DB:PRINT"{DOWN}F
        OR YOUR LOYALTY TO THE
         COMPANY,":PRINT"YOU R
        ECEIVE A SPECIAL BONUS
         OF";TAB(60);:ELSEGOTO
        1480
HP 1470 PRINTUSING"#$##,###,##
        #.##";DB
MQ 1480 PRINT"{DOWN}DON'T SPEN
        D IT ALL IN ONE PLACE!
        "
DX 1490 WINDOW 0,23,79,23:A$="
        {CYN}PRESS ANY KEY":GO
        SUB1160:RR=3:GOSUB520
DD 1500 GETA$:IFA$=""THEN1500
SP 1510 NEXT:BEND:IFRR=3THENRT
        =1:GOSUB350:RT=0:RETUR
        N
BQ 1520 IFRT=1THEN RT=0:X=X-1:
        RETURN:ELSE IFRR>1THEN
        RR=1:RETURN:ELSE RR=1:
        GOSUB520:RETURN
AG 1530 FORP=1TO2:IFFT(P)<100
        {SPACE}THEN BEGIN
FS 1540 WINDOW 0,0,79,24:COLOR
        6,13:SCNCLR
JB 1550 A$="{BLU}PLAYER"+STR$(
        P):GOSUB1160:PRINT"
        {BLK}{2 DOWN}"
CM 1560 PRINT"YOUR TOTAL WORTH
         HAS DECLINED TO LESS
        {SPACE}THAN $100.00.
        {2 SPACES}WE REGRET, (
        HEHEHE),"
DP 1570 PRINT"TO INFORM YOU TH
        AT YOUR SEAT ON THIS E
        XCHANGE HAS BEEN SOLD!
        {2 SPACES}PLEASE SHAKE
        "
GH 1580 PRINT"THE WINNER'S HAN
        D ON YOUR WAY OUT THE
        {SPACE}DOOR, AND DON'T
         SLAM IT!{3 DOWN}"
RE 1590 SOUND 1,6000,60:RR=3
QA 1600 A$="{RVS}{WHT} PRESS A
        NY KEY ":GOSUB1160
HC 1610 GET A$:IFA$=""THEN1610
        :ELSE RUN
SH 1620 BEND
AF 1630 IF FT(P)=>1000000.00TH
        ENBEGIN:WINDOW0,0,79,2
        4:SCNCLR
HK 1640 A$="{3}PLAYER"+STR$(P)
        :GOSUB1160:PRINT"{2}
        {3 DOWN}"
JA 1650 PRINT"CONGRATULATIONS!
        {2 SPACES}YOU ARE A MI
        LLIONAIRE.{2 SPACES}GO
         AHEAD AND SHAKE THE L
        OSER'S HAND."
HM 1660 PRINT"HE NEEDS THE COM
        FORT AFTER SUCH A CRUS
        HING DEFEAT.{2 SPACES}
        WELL DONE, NOW GET UP
        {SPACE}OUT"
RH 1670 PRINT"OF THAT CHAIR AN
        D LET SOMEONE ELSE PLA
        Y FOR A WHILE.":CH(P)=
        5000:FORZ=0TO5:BG(Z,P)
        =0:NEXT
JD 1680 SOUND1,9000,180,2,100,
        1000,0,100
PX 1690 PRINT"{3 DOWN}{YEL}":A
        $="PRESS ANY KEY":GOSU
        B1160
JQ 1700 GETKEYA$:RUN
FQ 1710 BEND
KQ 1720 NEXT
CQ 1730 RETURN
HP 1740 WINDOW0,0,79,24:PRINT"
        {CLR}{HOME}"
QR 1750 PRINTERR$(ER);EL
HS 1760 END
```

HUBERT CROSS

# FUSE

ADDING FUEL TO THE FIRE IS THE WHOLE IDEA BEHIND THIS BURNING ARCADE GAME FOR THE 64. JOYSTICK REQUIRED.

Lengths of fuse have been laid out in overlapping patterns on a playing screen of movable tiles. Your job, once the fuse has been lit, is to join lengths of fuse in order to keep the flame burning for as long as possible

Like many other puzzles, *Fuse* appears deceptively simple at the beginning, but it grows in complexity as the game progresses. You find that quick thinking and careful planning yield the highest scores.

## Getting Started

*Fuse* is written entirely in machine language, but it loads and runs as a BASIC program. You'll need *MLX*, the machine language entry program, to type it in. See "Typing Aids" elsewhere in this section. When *MLX* prompts you, respond with the values given below.

**Starting address: 0801**
**Ending address: 15F0**

After you've entered all the data for *Fuse*, save a copy to disk before exiting *MLX*. When you're ready to play, plug a joystick into port 2, load *Fuse*, and type RUN. Press the fire button to start playing.

The object of *Fuse* is to keep the flame burning for as long as possible. Help the flame stay alive by moving the tiles with the joystick. The longer you manage to keep it going, the higher your score. The game ends when the flame runs out of fuse or when it reaches one of the borders.

Don't wait until the flame is about to run out of fuse to start moving. Look ahead and follow the fuse to its end; then move to that area and maneuver the tiles to create the longest possible path. You won't be able to keep it going forever, but the longer you do, the more points you receive. As the flame travels, the fuse is burned up, leaving only a blank tile behind. So you must continuously shuffle the tiles around to keep the flame lit.

Sometimes it's a good idea to make the flame change paths by waiting beside a tile and moving that tile when the flame is on it. You'll have to be fast, though, because you'll lose if the flame reaches the tile's border before the tile stops moving.

# PROGRAMS

## Fuse

```
0801:0A 08 00 00 9E 32 30 36 6C
0809:31 00 00 00 BA 8E 12 08 ED
0811:A2 00 9A A2 00 A9 00 9D 34
0819:00 50 E8 D0 FA A9 3C 8D EB
0821:53 50 AD EF 15 8D 59 50 85
0829:A9 05 8D 55 50 A9 05 8D 17
0831:56 50 A9 0B 8D 57 50 A9 7A
0839:DF 8D FB 07 A9 CF 8D F9 2E
0841:07 20 81 FF A9 1F 8D 18 0A
0849:D0 A9 D8 8D 16 D0 A9 01 68
0851:8D 20 D0 A9 00 8D 21 D0 2E
0859:A9 0E 8D 22 D0 A9 06 8D 5C
0861:23 D0 A9 EE 8D 1C D0 A9 83
0869:0E 8D 25 D0 A9 01 8D 26 28
0871:D0 A9 07 8D 27 D0 A9 06 E3
0879:8D 28 D0 A9 06 8D 29 D0 98
0881:A9 06 8D 2A D0 A9 06 8D 03
0889:2C D0 A9 06 8D 2D D0 A9 E5
0891:06 8D 2E D0 20 0F 10 20 58
0899:8F 10 20 39 0F A9 09 8D CB
08A1:86 02 20 44 E5 A2 77 A9 10
08A9:00 9D 3D 13 CA 10 FA A9 30
08B1:0A 8D 72 13 A9 05 8D 4C 72
08B9:50 A9 04 8D 4D 50 A0 27 C9
08C1:A9 02 20 71 0C A0 27 A9 1D
08C9:01 20 71 0C 20 F0 12 20 5A
08D1:0A 0D A9 02 20 65 0D AD DD
08D9:00 DC 29 10 D0 F9 A9 03 0C
08E1:20 65 0D 78 A9 3E 8D 14 F9
08E9:03 A9 0A 8D 15 03 58 A9 0F
08F1:D0 8D 20 50 A9 06 8D 28 7F
08F9:50 A9 08 8D 30 50 20 F7 71
0901:0C 20 CE 0B A9 0F 8D 15 65
0909:D0 20 60 0C 20 DC 0D F0 D7
0911:F8 AD 4C 50 18 79 51 0B ED
0919:C9 0C B0 ED 8D 4E 50 AD FB
0921:4D 50 18 79 55 0B C9 0A FC
0929:B0 DF 8D 4F 50 8C 1E 0A 2D
0931:AD 4E 50 AC 4F 50 18 79 E7
0939:33 13 A8 B9 3D 13 8D 62 0E
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0C89:A9 33 85 FE 20 ED 0D EE A5
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0C99:20 ED 0D CE 5D 50 20 ED 26
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0CE9:C0 85 FB A0 3F B1 FB 99 9F
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0EE9:27 2D 33 0E 0E 0F 0F 0F 06
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0EF9:FF FA F7 F6 F5 FD FB FE E1
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0F09:F9 F8 F0 FA EF F1 EE EE 44
0F11:FF EF F7 F6 EE FD FB EF F0
0F19:EF F4 F5 EE F0 FE FC F1 89
0F21:EE ED F0 EF EC F1 F5 F5 60
0F29:FF FA FA F4 EE EE F0 EF B9
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0F41:4E 0F A9 38 8D 51 0F A0 73
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1079:52 69 17 76 6C 3C 22 12 12
1081:94 34 B6 1C 58 3C 44 12 DF
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10A9:EE A2 10 88 D0 EE 60 00 77
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10B9:00 3C 00 00 3C 00 00 3C 07
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1159:00 00 00 00 00 00 00 00 7B
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1319:88 10 D6 60 02 05 08 0B A7
1321:0E 11 14 17 1A 1D 20 23 2F
1329:02 04 06 08 0A 0C 0E 10 3F
1331:12 14 00 0C 18 24 30 3C 14
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1341:4D 44 2E 20 20 52 3D 52 FD
1349:45 43 23 2C 20 4C 3D 4F 06
1351:46 46 53 45 54 00 8B 13 B7
1359:7A 17 41 24 B2 22 50 22 CD
1361:AA C7 28 39 36 AA 38 29 5D
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1379:29 3A 20 98 31 34 2C 41 44
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1391:55 B2 53 43 3A 20 89 38 4B
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1449:07 07 07 07 07 07 07 07 71
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14F9:80 80 03 06 07 80 09 09 98
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1519:80 80 80 FF 01 00 FF 80 3C
1521:01 80 00 80 80 80 00 00 F9
1529:FF 80 00 00 80 80 FF 80 F9
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1549:00 01 00 80 00 80 01 80 40
1551:80 80 01 FF 00 80 01 FF FF
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1569:21 16 00 80 21 80 16 00 E8
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1581:16 80 0B 00 80 80 16 80 EA
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1591:50 21 80 80 DC DD D7 DE 31
1599:DC DE DD D8 DE DE DE DA 3E
15A1:DB D7 DA DE DB DE D8 DE E3
15A9:DE DE DC DB D9 DE DC DB 34
15B1:DE DE D9 DE DE DA DD D9 24
15B9:DA DE DE DD DE D9 DE DE BD
15C1:DA DB D9 DA DE DB DE DE 3C
15C9:D9 DE DE DC DD D9 DE DC 33
15D1:DE DD DE D9 DE DE DA DD 62
15D9:D7 DA DE DE DD D8 DE DE 5F
15E1:DE DC DB D7 DE DC DB DE AC
15E9:D8 DE DE DE 00 00 0A 00 16
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⊡

## COMING NEXT MONTH . . .

So what were the best games to hit the Commodore 8-bit market last year? I'm sure you have your favorites, but in next month's Gazette we'll ask our veteran software reviewers to talk about their favorite programs. Since they probably get to play and test more games in a year than most of us, if they like a program, it must be an outstanding one.

# PROGRAMS

PETER M. L. LOTTRUP

# HIGH VOLTAGE!

CHALLENGE A FRIEND TO THIS SHOCKING TWO-PLAYER GAME FOR THE 64

Here's a challenging and entertaining game that pits you and another player against each other. The object is to see who can be the first to move across a number of squares to the opposing side of the board first without getting electrocuted. The problem is, which squares are wired for you, which for your opponent, and which have no power at all? Play *High Voltage!* and find out.

## Typing It In

*High Voltage!* is written entirely in BASIC. To avoid typing mistakes, use *The Automatic Proofreader* to type it in. See "Typing Aids" elsewhere in this section. When you've finished, save the program to disk.

*High Voltage!* may be played from the keyboard or with a joystick plugged into port 2. After you've loaded and run the program, a presentation screen will appear. Press any key to start the game or press the fire button on the joystick. The computer will take a few seconds to "wire" the board (the board is different every time), and then the game will begin.

## Playing the Game

The object of *High Voltage!* is easy: Get to the opposing side of the board before your opponent does. The red player (player 1) moves from the top of the board to the bottom. The green player (player 2) moves from the bottom to the top.

The starting player is chosen at random by the computer. The player's turn is displayed on the bottom right of the screen. You may start from any of the squares along the top or bottom row, but you may move only on squares that are your color. The problem is that you can't tell what color a square is until you select it by pressing the fire button or hitting Return.

If you accidentally move onto a square with your opponent's color, you get zapped and are returned to your end of the board. You lose control of the game, and it becomes the other player's turn. If you fall on a square that's black (not wired at all), you'll be returned to your previous position and may try again. You may land on up to three black squares, after which control passes to the other player. When you're zapped back to the start, you'll have to retrace your steps. Observation and a good memory will help, as you'll have to remember your steps along the board to be able to retrace them later.

Movement is limited to one position in any of eight directions and is controlled by the cursor keys on the keyboard or the joystick. To move to a square, put the cursor on it and press the fire button or press Return. If it's an invalid move, nothing will happen. Otherwise, you'll see what hides in that position.

The game ends when either player has reached the other side of the board. The computer will reveal the board and announce the winner; you may then play again by pressing any key or the fire button.

If play gets to be too frustrating, you can press f7 at any time to end the current game without there being any winners. The game board and all the squares will then be displayed with the correct path revealed. Play can then be resumed.

## Strategy

*High Voltage!* requires good memory and careful observation as well as luck. There will always be at least one correct path to the other side of the board, sometimes more. Pay attention to your own moves and try to memorize the moves you're making. Also watch what your opponent reveals. His or her mistakes may help you know the ending positions of your own path on the board.

Watch out for booby traps. Some paths may seem correct for two or three moves, but there will be no way out, making you lose valuable time backtracking.

## High Voltage

```
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QK 10 V=53248:POKEV,0:POKEV+1,
      0:POKEV+21,3:POKEV+23,0:
      POKEV+29,0:POKE53287,1
KJ 20 POKE2040,13:X=RND(-TI)
PX 30 FORI=832TOI+63:POKEI,0:N
      EXT
PJ 40 FORI=836TO886STEP3:POKEI
      ,28:NEXT
RF 50 FORI=859TO864:POKEI,255:
      NEXT
HA 60 X=11:PRINT"{CLR}";:POKE5
      3280,0:POKE53281,0
QG 70 DIMV$(25),T(X,X)
AR 80 V$(0)="{HOME}":FORI=1TO2
      4:V$(I)=V$(I-1)+"{DOWN}"
      :NEXT
RQ 90 GOSUB1170:GOSUB1380:PRIN
      TV$(17)TAB(26)"{CYN}WIRI
      NG BOARD"
KH 100 PRINTTAB(26)"PLEASE WAI
       T..."
HE 110 Y1=1:Y2=X
KQ 120 X1=INT(RND(1)*X)+1
GJ 130 T(Y1,X1)=2:O1=X1:U1=Y1
QM 140 XX=INT(RND(1)*5)+4
JQ 150 IFXX=4THENX1=X1-1
KR 160 IFXX=5THENX1=X1+1
MF 170 IFXX=6THENX1=X1-1:Y1=Y1
       +1
DA 180 IFXX=7THENY1=Y1+1
GF 190 IFXX=8THENY1=Y1+1:X1=X1
       +1
FA 200 IFX1>XORX1<1ORY1>XORY1<
       1THENX1=O1:Y1=U1:GOTO14
       0
```

# PROGRAMS

```
FR 210 IFT(Y1,X1)=0ORT(Y1,X1)=
       2THENT(Y1,X1)=2:GOTO230
CE 220 X1=O1:Y1=U1:GOTO140
QF 230 IFY1<>XTHEN130
GJ 240 X2=INT(RND(1)*X)+1:IFT(
       Y2,X2)THEN240
DS 245 WW=0:T(Y2,X2)=5
ME 250 O1=X2:U1=Y2
JC 260 XX=INT(RND(1)*5)+4
RM 270 IFXX=4THENX2=X2-1
QP 280 IFXX=5THENX2=X2+1
GC 290 IFXX=6THENX2=X2-1:Y2=Y2
       -1
AR 300 IFXX=7THENY2=Y2-1
BH 310 IFXX=8THENY2=Y2-1:X2=X2
       +1
BP 320 IFX2>XORX2<1ORY2>XORY2<
       1THENX2=O1:Y2=U1:GOTO26
       0
QX 330 IFT(Y2,X2)=0THENT(Y2,X2
       )=5:GOTO370
GK 340 IFT(Y2,X2)=2THENWW=WW+1
CC 350 IFWW>5THENY2=X:X2=INT(R
       ND(1)*X)+1:GOTO240
FM 360 X2=O1:Y2=U1:GOTO260
GS 370 IFY2<>1THEN250
FB 380 FORI=1TOX:FORJ=1TOX:IFT
       (I,J)=2ORT(I,J)=5THEN42
       0
QF 390 UX=RND(1):IFUX<.2THENT(
       I,J)=2:GOTO420
AF 400 IFUX>.8THENT(I,J)=5:GOT
       O420
MX 410 T(I,J)=0
XH 420 NEXTJ,I
AB 430 S1=1:S2=1:T1=X:T2=X
KE 440 POKE198,0:PL=INT(RND(1)
       *2)+1
BA 450 C=0:GOSUB1330
QM 460 IFPL=2THEN710
GQ 470 U1=S1:U2=S2
RE 480 A=S1:B=S2:POKE53287,2:I
       FC>2THEN700
KF 490 POKEV,B*2*8+20:POKEV+1,
       A*2*8+48:OA=A:OB=B
HG 500 GETA$
BP 510 IFA$="{RIGHT}"THENB=B+1
       :GOTO590
RG 520 IFA$="{LEFT}"THENB=B-1:
       GOTO590
SB 530 IFA$="{UP}"THENA=A-1:GO
       TO590
XD 540 IFA$="{DOWN}"THENA=A+1:
       GOTO590
FX 550 IFA$=CHR$(13)THEN610
BX 560 IFA$="{F7}"THENPL=0:GOT
       O1040
GX 570 U=PEEK(56320):GOSUB1580
       :IFA$<>""THEN510
GH 580 GOTO500
KK 590 IFA<1ORB<1ORA>XORB>XTHE
       NA=OA:B=OB:GOTO490
JQ 600 GOTO490
PX 610 IF(S1=1ANDA>1)OR(S1<>1)
       THEN630
HR 620 S1=A:S2=B:GOTO650
QF 630 IFABS(S1-A)>1ORABS(S2-B
       )>1THEN490
XK 640 S1=A:S2=B
JG 650 POKEV,0:POKEV+1,0
HB 660 I=S1:J=S2:GOSUB980:IFT(
       I,J)=5THEN700
FS 670 IFT(I,J)=0THENGOSUB1520
       :GOSUB950:S1=U1:S2=U2:C
       =C+1:GOTO470
EF 680 GOSUB1500:GOSUB950:IFS1
       <XTHEN470
XP 690 WW=1:GOTO1040
RR 700 PL=2:S1=1:S2=1:FL=1:GOS
       UB1540:GOSUB950:GOTO450
MX 710 V1=T1:V2=T2
BF 720 A=T1:B=T2:POKE53287,5:I
       FC>2THEN940
RH 730 POKEV,B*2*8+20:POKEV+1,
       A*2*8+48:OA=A:OB=B
QG 740 GETA$
QB 750 IFA$="{RIGHT}"THENB=B+1
       :GOTO830
DQ 760 IFA$="{LEFT}"THENB=B-1:
       GOTO830
FK 770 IFA$="{DOWN}"THENA=A+1:
       GOTO830
BE 780 IFA$="{UP}"THENA=A-1:GO
       TO830
DH 790 IFA$=CHR$(13)THEN850
KS 800 IFA$="{F7}"THENPL=0:GOT
       O1040
JC 810 U=PEEK(56320):GOSUB1580
       :IFA$<>""THEN750
EJ 820 GOTO740
SX 830 IFA<1ORB<1ORA>XORB>XTHE
       NA=OA:B=OB:GOTO730
DP 840 GOTO730
XH 850 IF(T1=XANDA<X)OR(T1<>X)
       THEN870
AG 860 T1=A:T2=B:GOTO890
SA 870 IFABS(T1-A)>1ORABS(T2-B
       )>1THEN730
HJ 880 T1=A:T2=B
BG 890 POKEV,0:POKEV+1,0
PJ 900 I=T1:J=T2:GOSUB980:IFT(
       I,J)=2THEN940
JQ 910 IFT(I,J)=0THENGOSUB1520
       :GOSUB950:T1=V1:T2=V2:C
       =C+1:GOTO710
DM 920 GOSUB1500:GOSUB950:IFT1
       <>1THEN710
SM 930 WW=2:GOTO1040
GG 940 PL=1:T1=X:T2=X:FL=1:GOS
       UB1540:GOSUB950:GOTO450
ED 950 IFI=7THENPRINTV$(I*2-1)
       TAB(40+J*2)"{BLU}{RVS}
       {A}{S}{DOWN}{2 LEFT}{Z}
       {X}{HOME}":GOTO970
RD 960 PRINTV$(I*2)TAB(J*2)"
       {BLU}{RVS}{A}{S}{DOWN}
       {2 LEFT}{Z}{X}{HOME}";
MC 970 RETURN
QJ 980 IFT(I,J)=2THENPRINT"
       {RED}";
SG 990 IFT(I,J)=5THENPRINT"
       {GRN}";
PS 1000 IFT(I,J)=0THENPRINT"
       {BLK}";
FM 1010 IFI=7THENPRINTV$(I*2-1
       )TAB(40+J*2)"{RVS}UI
       {DOWN}{2 LEFT}JK{HOME}
       ";:GOTO1030
JS 1020 PRINTV$(I*2)TAB(J*2)"
       {RVS}UI{DOWN}{2 LEFT}J
       K{HOME}";
SB 1030 RETURN
CQ 1040 POKEV+21,0:FORI=1TOX:F
       ORJ=1TOX:GOSUB980:NEXT
       J,I
SF 1050 GOSUB1540:IFPL=0THEN11
       20
XA 1060 PRINTV$(10)TAB(5)"
       {WHT}{OFF}{A}*********
       ******{S}"
EQ 1070 PRINTTAB(5)"{WHT}-
       {15 SPACES}-"
PD 1080 PRINTTAB(5)"- {YEL}THE
        WINNER IS -"
CG 1090 PRINTTAB(5)"{WHT}-
       {YEL}PLAYER #"PL:PRINT
       V$(13)TAB(17)" !
       {2 SPACES}{WHT}-"
PQ 1100 PRINTTAB(5)"{WHT}-
       {15 SPACES}-"
JA 1110 PRINTTAB(5)"{WHT}{Z}**
       ************{X}"
FB 1120 PRINTV$(17)TAB(26)"
       {OFF}{CYN}PRESS ANY KE
       Y"
GB 1130 PRINTTAB(26)"
       {2 SPACES}OR <FIRE> "
GR 1140 PRINTV$(19)TAB(66)"TO
       {SPACE}PLAY AGAIN"
PR 1150 GETA$:U=PEEK(56320):IF
       A$<>""ORU=111THENRUN
SP 1160 GOTO1150
FD 1170 A1$="{RVS}{RIGHT}{4}
       {BLU}":A2$=A1$
RH 1180 TA(1)=0:TA(2)=2:TA(3)=
       5
JF 1190 FORI=1TO11:A1$=A1$+"
       {A}{S}":NEXT
KC 1200 AA$=AA$+"{4} "+CHR$(13
       )+"{RIGHT}{RVS} {7}"
FP 1210 FORI=1TO11:A2$=A2$+"
       {Z}{X}":NEXT
KG 1220 GOSUB1290:GOSUB1380:GO
       SUB1540
AS 1230 PRINTV$(17)TAB(26)"
       {CYN}PRESS ANY KEY"
HA 1240 PRINTTAB(26)"TO BEGIN.
       .."
CX 1250 I=INT(RND(1)*11)+1:J=I
       NT(RND(1)*11)+1:T(I,J)
       =TA(INT(RND(1)*3)+1)
MH 1260 GOSUB980:T(I,J)=0:GETA
       $:U=PEEK(56320):IFA$<>
       ""ORU=111THEN1280
CD 1270 GOTO1250
FK 1280 GOSUB1290:RETURN
QJ 1290 PRINT"{CLR}{RIGHT}
       {DOWN}{RVS}{4}";
FX 1300 FORI=1TO12:PRINT"
       {2 SPACES}";:NEXT:PRIN
       T
JC 1310 FORI=1TO11:PRINTA1$"
       {4} ":PRINTA2$"{4} ":N
       EXT
BF 1320 PRINT"{RIGHT}{RVS}{4}"
       ;:FORI=1TO12:PRINT"
       {2 SPACES}";:NEXT:RETU
       RN
QC 1330 PRINTV$(17)TAB(26)"
       {BLU}{OFF}{A}*********
       *{S}"
XM 1340 PRINTTAB(26)"-";:PRINT
       "{RED}";:IFPL=2THENPRI
       NT"{GRN}";
QA 1350 PRINT" PLAYER"PL:PRINT
       V$(18)TAB(36)"{BLU} -
       {2 SPACES}"
PJ 1360 PRINTV$(19)TAB(66)"
       {BLU}{OFF}{Z}*********
       *{X}":RETURN
BH 1370 PRINTV$(3)TAB(28)"
       {OFF}{RED} {RVS}£
```

```
        {5 SPACES}{*}"
SG 1380 H=26:PRINTV$(3)TAB(H)"
        {OFF}{6 SPACES}{RVS}
        {YEL}£{3 SPACES}{OFF}
        £"
BQ 1390 PRINTTAB(H)"{5 SPACES}
        {RVS}£{3 SPACES}{OFF}
        £"
FS 1400 PRINTTAB(H)"{4 SPACES}
        {RVS}£{3 SPACES}{OFF}
        £"
QH 1410 PRINTTAB(H)"{5 SPACES}
        {RVS}£{2 SPACES}{OFF}
        £"
SE 1420 PRINTTAB(H)"{4 SPACES}
        {RVS}£{2 SPACES}{OFF}
        £"
JD 1430 PRINTTAB(H)"{3 SPACES}
        {RVS}£{2 SPACES}{OFF}
        £"
AJ 1440 PRINTTAB(H)"{4 SPACES}
        {RVS}£ {OFF}£"
HG 1450 PRINTTAB(H)"{3 SPACES}
        {RVS}£ {OFF}£"
HX 1460 PRINTTAB(H)"{2 SPACES}
        {RVS}£ {OFF}£"
PS 1470 PRINTTAB(H)"{2 SPACES}
        {RVS}£{OFF}£"
AC 1480 PRINTTAB(H)" {RVS}£
        {OFF}£"
CD 1490 PRINTV$(9)TAB(26)"
        {YEL}{OFF}HIGH{RVS}£
        {OFF}VOLTAGE!":RETURN
BP 1500 POKE54273,70:POKE54278
        ,249:POKE54296,15:POKE
        54276,17:POKE54276,16
QX 1510 FORDY=1TO500:NEXT:POKE
        54273,0:RETURN
RB 1520 FORP=1TO15:POKE54296,1
        5:POKE54296,0:NEXT:RET
        URN
DP 1530 FORB=1TO250STEP3:POKE5
        4273,B:NEXT:POKE54296,
        0:FL=0:RETURN
RS 1540 FORP=54272TO54295:POKE
        P,0:NEXT:POKE54296,15
MD 1550 POKE54277,8:POKE54278,
        255:POKE54276,23:A=6:P
        OKE54287,A:IFFLTHEN153
        0
CQ 1560 FORB=1TO150:POKE54273,
        B:A=A-.01:NEXT
KJ 1570 GOSUB1500:POKE54296,0:
        RETURN
MC 1580 A$="":IFU=111THENA$=CH
        R$(13)
HR 1590 IFU=119THENA$="{RIGHT}
        "
JR 1600 IFU=123THENA$="{LEFT}"
HK 1610 IFU=126THENA$="{UP}"
XS 1620 IFU=125THENA$="{DOWN}"
JH 1630 RETURN
```

### TYPING AIDS

*MLX*, the machine language entry program for the 64 and 128, and *The Automatic Proofreader* are utilities that help you type in Gazette programs without making mistakes. These labor-saving utilities are on each *Gazette Disk* and printed in issues of *Gazette* through June 1990.

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If you don't have access to a back issue or to one of our disks, write and we'll send you free copies of both of these handy utilities. We'll also include instructions on how to type in Gazette programs. Please enclose a self-addressed, stamped envelope.

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Write to Typing Aids, COMPUTE!'s Gazette, 324 West Wendover Avenue, Greensboro, North Carolina 27408.

KEITH M. GROCE

# TEXT FITTER

## PRINT TEXT IN COLUMNS OR HAVE IT FLOW IN WHATEVER SHAPE YOU DESIRE WITH THIS HANDY PRINTING UTILITY FOR THE 64

There are times when it would be nice to print a word processor file in something other than the box you get from setting margins. For example, you might want to print on letterhead or stationery without running into the preprinted matter, leave space for photos or hand-drawn illustrations, turn your notes into 3 × 5 cards, or print the text of your annual Christmas letter in the shape of a Christmas tree.

This program is a convenient way for anyone who doesn't own a desktop publishing program yet may want to publish a simple newsletter and have text fit around a graphic or photograph. You can place text in columns, rectangles, or any other shape that fits your requirements, preview it on your monitor, and then have the finished product roll off your printer.

*Text Fitter* lets you set text boundaries for each line and then fill these areas from standard Commodore-ASCII sequential files. The boundaries, or text-limit lines, are drawn anywhere on an 80-column × 55-line page. Word-wrapped text is placed between limit lines. You may also save any text which has not been placed in a "leftover" file. *Text Fitter* prints only one page at a time. The program pours text in, filling your custom-designed page or shape. If you have more text in the file than is needed to fill the page, then the leftovers are saved and can be printed in another custom page or printed normally with your word processor.

### Getting Started

*Text Fitter* consists of a BASIC program and machine language subroutines. The BASIC program should be entered with *The Automatic Proofreader;* the machine language program, with *MLX*. See "Typing Aids" elsewhere in this section. When *MLX* prompts you, respond with the values given below.

**Starting address: C000**
**Ending address: C808**

Once you've finished entering the data, save a copy to disk. The BASIC program loads the machine language program, so be sure to save the ML program as FITTER.ML.

### Using the Program

Before using *Text Fitter,* you must create a source file. Any Commodore-ASCII sequential file (like those produced by *Easy Script* or by printing a file to disk with *SpeedScript*) is acceptable. Don't include control characters for underlining, italics, or the

like in your text file because the results will be unsatisfactory.

When you load and run *Text Fitter*, a menu/help screen will be displayed. This screen lists all the commands to manipulate the text-limit lines. Press a key as indicated to move to the layout screen. Mark text-limit lines by moving the red and green cursors to the endpoints of the line you want to mark and pressing the M key. Marked lines will appear as a series of dashes on the layout screen. Connect lines to block out areas of text and non-text. (Note that the printing area edges are also text limits.) The layout screen displays the cursor positions in terms of column/line count and inches as measured from the upper left corner of the printing area. This is helpful when you need to lay out your text accurately.

When you've finished marking limit lines, return to the menu/help screen and press the T key. You'll be asked to enter the name of your source file and, optionally, leftover filenames for the text.

After these have been entered, the source file will be opened, and a second menu/help screen will be displayed. Press a key and move to the layout screen as before. Position the cursor where the first character is to be placed and press the T key. (Don't place the cursor directly on a dashed line.) Text will fill down the area marked, following the leftmost limit until no open spaces are detected beneath the line last placed.

Text characters are marked with dots on the layout screen page. Move the cursor and fill any open areas desired. Note that text will only fill downward from the starting point, since that's the way text is read. (If you want an open area in the middle of the page, divide the page into two or more columns to give each area of text a leftmost limit to follow.)

You can start a new source file from the menu/help screen by pressing the F key. The leftover file (if any) will be saved, and the new filename will be entered as before.

To print or save your page, press the S key at the menu/help screen. The source file will be closed and the leftover file saved before a third menu screen appears. From this menu you can print the page or save the formatted page to disk. The saved disk file may be loaded into your word processor for enhancements or printing. Adjust the printer OPEN statement in Line 550 to match the secondary address for your printer. Also note the REM satement in line 540 that provides for carriage returns to be added at the end of each line should your printer require them.

## TEXT FITTER

```
PM 10 REM COPYRIGHT 1990, COMP
      UTE PUBLICATIONS INT'L,
      {SPACE}LTD. ALL RIGHTS R
      ESERVED.
AP 20 POKE55,192:POKE56,91
PM 30 IFA=0THENA=1:LOAD"FITTER
      .ML",8,1
PX 40 SYS49252:REM INIT
MA 50 POKE53280,0:POKE53281,0
RJ 60 PRINT"{CLR}{7}TEXT FITTE
      R - MARK TEXT LIMIT LINE
      S{CYN}"
EE 70 PRINT"{2 DOWN}SELECT CUR
      SOR: [R]=RED [G]=GREEN"
RH 80 PRINT"{DOWN}MOVE SELECTE
      D CURSOR WITH [CRSR] KEY
      S"
SH 90 PRINT"{DOWN}[M]=MARK LIN
      E BETWEEN CURSORS"
GA 100 PRINT"{DOWN}[U]=UNMARK
      {SPACE}LINE"
AH 110 PRINT"{DOWN}[CLR]=REMOV
      E ALL LINES"
GD 120 PRINT"{DOWN}[<]=RETURN
      {SPACE}TO THIS SCREEN"
HB 130 PRINT"{2 DOWN}{8}PRESS
      {SPACE}[T] AT THIS SCRE
      EN TO BEGIN"
AQ 140 PRINT"{DOWN}PLACING TEX
      T. {6}PRESS ANY OTHER K
      EY TO"
HP 150 PRINT"{DOWN}CONTINUE MA
      RKING LINES."
RM 160 GETK$:IFK$=""THEN160
KP 170 IFK$="T"THEN200
DG 180 SYS50450:REM MARKL
KA 190 GOTO160
GR 200 PRINT"{CLR}{7}TEXT FITT
      ER - PLACE TEXT{CYN}"
QB 210 PRINT"{DOWN}INSERT DISK
       AND ENTER FILENAME"
XH 220 PRINT"(PRESS [RETURN] A
      LONE TO GO BACK.)"
SG 230 SF$="":INPUTSF$:IFSF$="
      "THEN60
JF 240 PRINT"{DOWN}ENTER FILEN
      AME FOR LEFTOVER TEXT"
DH 250 PRINT"(PRESS [RETURN] A
      LONE FOR NO FILE.)"
JA 260 LF$="":INPUTLF$
QR 270 OPEN2,8,2,"0:"+SF$+",S,
      R"
GP 280 PRINT"{CLR}{7}TEXT FITT
      ER - PLACE TEXT{CYN}"
EF 290 PRINT"{DOWN}MOVE CURSOR
       WITH [CRSR] KEYS"
QH 300 PRINT"{DOWN}[T]=FILL WI
      TH TEXT AT CURSOR LOCAT
      ION"
HG 310 PRINT"{DOWN}[<]=RETURN
      {SPACE}TO THIS SCREEN."
XD 320 PRINT"{2 DOWN}{8}PRESS
      {SPACE}[S] AT THIS SCRE
      EN TO SAVE OR"
EQ 330 PRINT"{DOWN}PRINT THE P
      AGE, [F] TO START A NEW
      "
SR 340 PRINT"{DOWN}SOURCE FILE
      . {6}PRESS ANY OTHER KE
      Y TO"
HD 350 PRINT"{DOWN}CONTINUE PL
      ACING TEXT."
AM 360 GETK$:IFK$=""THEN360
AA 370 IFK$="S"ORK$="F"THEN420
CE 380 SYS50683:IFPEEK(49249)=
      0THEN360:REM MARKTX, SA
      VEST
RP 390 CLOSE2:PRINT"{CLR}END O
      F ";SF$:PRINT"{DOWN}PRE
      SS ANY KEY"
SQ 400 GETK$:IFK$=""THEN400
GM 410 GOTO200
PB 420 IFLF$<>""THENOPEN3,8,3,
      "0:"+LF$+",S,W":SYS5115
      3:CLOSE3:REM LFTOVR
EG 430 CLOSE2
KD 440 IFK$="F"THEN200
HD 450 PRINT"{CLR}{7}TEXT FITT
      ER - SAVE/PRINT{CYN}"
BF 460 PRINT"{DOWN}[D]=SAVE TO
       DISK."
BD 470 PRINT"{DOWN}[P]=PRINT (
      BE SURE PRINTER IS READ
      Y)."
AJ 480 PRINT"{DOWN}[X]=EXIT."
AB 490 GETK$:IFK$<>"D"THEN530
FA 500 INPUT"FILENAME";SF$
DM 510 OPEN2,8,2,"0:"+SF$+",S,
      W"
AJ 520 SYS51098:CLOSE2:GOTO450
      :REM OUTPGE
KQ 530 IFK$<>"P"THEN560
SM 540 REM POKE51133,13:REM TO
       ADD RETURN TO EACH LIN
      E
FC 550 OPEN2,4,7:SYS51098:PRIN
      T#2:CLOSE2:GOTO450:REM
      {SPACE}OUTPGE
HM 560 IFK$<>"X"THEN490
JK 570 END
```

## FITTER.ML

```
C000:70 D8 88 D8 70 00 00 00 12
C008:00 01 03 05 06 08 00 06 D0
C010:03 00 06 03 FD 7F DF F7 A9
C018:05 00 03 06 01 04 07 02 05
C020:06 01 04 07 02 05 00 03 FC
C028:03 0F 0C 20 30 30 20 28 1D
C030:30 2E 30 30 29 20 00 0C 34
C038:09 0E 05 20 30 30 20 28 0F
C040:30 2E 30 30 29 00 1F 20 16
C048:3D 20 0D 05 0E 15 00 00 27
C050:00 00 00 00 00 00 00 00 D1
C058:00 00 00 00 00 00 00 00 D9
C060:00 00 00 00 A9 00 8D 62 AC
C068:C0 A9 7F 8D 0D DC A5 01 A5
C070:29 FB 85 01 A0 00 B9 00 BE
C078:D0 99 00 80 B9 00 D1 99 DB
C080:00 81 C8 D0 F1 A5 01 09 B9
C088:04 85 01 A9 81 8D 0D DC 61
C090:A9 00 A2 12 A0 00 84 FB 66
C098:A0 82 84 FC A0 00 91 FB 8F
C0A0:C8 D0 FB E6 FC CA 10 F6 D2
C0A8:A0 00 8C 53 C0 A2 00 8E 60
```

# PROGRAMS

```
C0B0:52 C0 20 D5 C1 AE 52 C0 1B
C0B8:A9 00 E0 16 B0 0E A9 F0 8E
C0C0:E0 15 F0 08 A9 1F E0 00 22
C0C8:F0 02 A9 FF A0 07 91 FD BA
C0D0:88 10 FB E8 E0 28 D0 D7 C9
C0D8:AC 53 C0 C8 8C 53 C0 C0 1E
C0E0:19 D0 CA A9 0A 8D 27 D0 BC
C0E8:A9 0D 8D 28 D0 A0 00 A9 69
C0F0:F0 99 00 5C 99 00 5D 99 38
C0F8:00 5E 99 00 5F C8 D0 F1 F6
C100:A9 00 8D 20 D0 A9 6F 8D A5
C108:F8 5F 8D F9 5F A9 19 8D 92
C110:52 C0 A9 03 8D 53 C0 20 AD
C118:44 C2 20 0F C2 A9 19 8D DF
C120:52 C0 A9 05 8D 53 C0 20 DD
C128:44 C2 20 29 C2 A9 19 8D 91
C130:52 C0 A9 09 8D 53 C0 20 2E
C138:49 C2 20 0F C2 A9 19 8D 82
C140:52 C0 A9 0B 8D 53 C0 20 5E
C148:49 C2 20 29 C2 A9 1C 8D 3A
C150:52 C0 A9 16 8D 53 C0 A2 A1
C158:00 8E 50 C0 BD 46 C0 F0 0F
C160:0D 20 71 C2 EE 52 C0 AE BD
C168:50 C0 E8 4C 59 C1 A0 3F 78
C170:A9 00 99 C0 5B 88 10 FA 20
C178:A0 15 A2 07 BD 00 C0 99 5F
C180:C0 5B 88 88 88 CA 10 F4 59
C188:A9 01 8D 56 C0 8D 58 C0 E5
C190:8D 57 C0 8D 59 C0 20 AD 5D
C198:C2 4C DA C2 A9 03 2C A9 73
C1A0:01 8D 15 D0 AD 00 DD 29 0A
C1A8:FE 8D 00 DD A9 79 8D 18 53
C1B0:D0 AD 11 D0 09 20 8D 11 2C
C1B8:D0 60 A9 00 8D 15 D0 AD 02
C1C0:11 D0 29 DF 8D 11 D0 A9 20
C1C8:15 8D 18 D0 AD 00 DD 09 7C
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C1D8:FD A9 60 85 FE A9 40 85 CE
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C1E8:C2 20 01 C2 A9 00 85 FB 76
C1F0:86 FC 20 01 C2 A9 08 85 5D
C1F8:FB AD 52 C0 85 FC 20 9A 37
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C208:A5 FE 65 FC 85 FE 60 A2 28
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C218:2A 20 71 C2 EE 52 C0 AE 06
C220:50 C0 E8 8E 50 C0 4C 14 36
C228:C2 A2 00 8E 50 C0 BD 37 D8
C230:C0 F0 10 20 71 C2 EE 52 1D
C238:C0 AE 50 C0 E8 8E 50 C0 C2
C240:4C 2E C2 60 A2 A0 4C 4B 51
C248:C2 A2 D0 A9 00 85 FD A9 48
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C258:A9 28 85 FC 20 9A C2 20 4E
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C270:30 8D 51 C0 20 D5 C1 AD 31
C278:51 C0 85 FB A9 08 85 FC BC
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C2E0:59 C0 69 3D 8D 03 D0 AD 0C
C2E8:58 C0 0A 18 69 1C 8D 02 66
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C2F8:C0 20 45 C3 A9 0B 8D 53 B3
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C310:C3 20 6F C2 EE 52 C0 A5 83
C318:FA 20 6F C2 A9 22 8D 52 82
C320:C0 AD 4F C0 A2 06 20 6F 46
C328:C3 20 6F C2 EE 52 C0 EE E4
C330:52 C0 A4 FA B9 08 C0 20 E4
C338:6F C2 EE 52 C0 A4 FA B9 73
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C350:6F C2 EE 52 C0 A5 FA 20 F5
C358:6F C2 A9 21 8D 52 C0 A5 6C
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C7D0:FF AC 62 C0 F0 17 A2 03 10
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